City of Bellevue

MEMORANDUM

TO: Transportation Department Staff

FROM: David Berg, Director

DATE: February 12, 2014

SUBJECT: Effective Date of Updated Design Manual

As a part of a continuing program to improve City standards and practices, the Transportation Department's Design Manual, which includes design standards, drawings, and guidelines for construction of transportation infrastructure, has been updated.

This update consists of modifications and improvements to the Standard Drawings and an update to Appendix B, BelRed Guidelines and Standards. The complete updated Design Manual is available on line at: http://www.bellevuewa.gov/transportation_design_manual.htm. Updated, new, and deleted drawings will each be identified as such, in addition to their titles being italicized and/or bolded.

The BelRed Corridor Subarea Plan and rezone, adopted in 2009, and the updated BelRed Land Use Code (LUC 20.25D) established a local street grid system in the BelRed Corridor area that emphasizes continuity, connectivity, and community character. In 2011, The BelRed Corridor Plan: Streetscape Character, Guidelines and Standards was included in the Design Manual as Appendix B. This update to Appendix B expands the guidelines to include arterials in addition to local streets, which were the focus of the original document.

The revisions should be incorporated for projects currently under design where the revisions can be incorporated without scope change or a cost increase to the project. Many aspects of Appendix B are conceptual and may be modified during the design phase of a project, provided that the intent of the BelRed Corridor Subarea Plan, rezone, and code are maintained.

The effective date of the revised Design Manual is February 12, 2014.


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DESIGN MANUAL

Transportation Department
City of Bellevue

February 12th, 2014


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INTRODUCTION

The purpose of the Transportation Department's *Design Manual* is to establish requirements for the development of transportation-related facilities in the City of Bellevue. The *Design Manual* should be used for new development projects, projects that modify existing developments or city right of way, and city constructed projects. This manual is to be used as a resource by City staff, citizens, developers, contractors, and design professionals. The *Design Manual* is based upon and implements city, state, and national laws, codes, regulations, ordinances, plans, and policies.

Good design of projects is a goal of the City. These design requirements are intended to supplement, but not substitute for, competent work by design professionals. Given our complex environment, the designer of transportation facilities may need to make decisions regarding competing project elements. Since the authors of the *Design Manual* cannot anticipate all such situations; the design professional has the responsibility to apply engineering analysis and sound professional judgment in the design process.

It is not the intent of the City to unreasonably limit any innovative or creative effort that could result in a superior design. When innovative or creative designs are proposed that fall outside of the design parameters of this manual, additional documentation will be required to record the decision-making process. Proposed departures from these standards will be evaluated on the basis that the proposal will meet requirements for safety, economical maintenance, and pleasant appearance, and will produce acceptable results for the user, the environment, and the public.


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P A R T 1 – Design Standards

S E C T I O N S


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1. General Considerations

A. References and Authority. The Transportation Department Director is authorized by Bellevue City Code (BCC) 14.60 (also known as the Transportation Development Code) to prepare, adopt, and update standards:

(1) To establish minimum requirements for the design and construction of transportation facilities; and

(2) To protect existing facilities during construction.

The standards contained in this document constitute the design standards authorized by Transportation Development Code section 14.60.021. These standards are intended to be consistent with the most currently adopted provisions and editions of the Bellevue City Code, the Comprehensive Plan, and the publications cited in Appendix A and Appendix B of this Manual.

B. Permits. Permits, approvals, and agreements are required by the City, and sometimes other jurisdictions, prior to the initiation of any construction described within this Manual. The majority of work covered under these standards will require multiple permit authority review and approvals. Any questions about permits, approvals, and agreements should be directed to the appropriate code authority at the City's Permit Center.

C. Professional Qualifications. Professionals in the technical fields of civil engineering, structural engineering, electrical engineering, geotechnical engineering, landscape architecture, soils engineering, and surveying who prepare or are responsible for the preparation of drawings, plans, specifications, or technical reports for obtaining permits and approvals shall be currently licensed or registered in the state of Washington and qualified by both experience and educational background in the technical areas as warranted by the specifics of the proposed project.

D. Deviation from Standards. Except as provided for elsewhere in other city codes or resolutions, deviations from these standards may be granted by the Transportation Department Director. The Director's decision to grant, deny, or modify the proposed deviation shall be based upon evidence that the request can meet the following criteria:

(1) Except where infill development is proposed, the deviation will achieve the intended result with a comparable or superior design; and,

(2) The deviation will not adversely affect safety or operation; and,

(3) The deviation will not adversely affect maintainability.

A request for approval of a deviation to a standard must be submitted in writing to the Transportation Department Director. The applicant shall present supporting information that would justify approval of the request in terms of the above criteria. The Directors of the appropriate departments or their authorized representatives shall approve or deny the request based upon these criteria.

Where infill development is proposed, the review engineer shall have the authority to allow a deviation from these standards in order to allow the new conditions to be consistent with adjacent conditions if, in the discretion of the review engineer, the adjacent conditions are unlikely to be replaced or modified in the foreseeable future, and if the deviation satisfies criteria (2) and (3) mentioned above.

E. Changes to This Manual. From time to time, it may be necessary to modify the standards in the *Design Manual*. The Director of the Transportation Department may incorporate minor changes to this Manual as they become necessary; general updates shall include an opportunity for public review and comment.

F. Other Design Criteria. In addition to the standards and design criteria in the *Design Manual* and in the Bellevue City Code, decisions regarding sight distance, horizontal and vertical alignment, signage, and other criteria appropriate for the design of City streets shall be consistent with the AASHTO, WSDOT and APWA design manuals, the ADA, and with the MUTCD.

Design of transportation facilities and pedestrian-related infrastructure shall be consistent with the requirements of the ADA, the PROWAG, and the applicable guidelines of WSDOT's Design Manual.

G. Meaning of Terms. The definitions of words and phrases as contained in BCC 14.60 (Transportation Development Code) are hereby incorporated by reference.

H. Abbreviations.

AASHTO - American Association of State Highway and Transportation Officials
ADA - Americans With Disabilities Act
PROWAG – Public Right or Way Accessiblity Guidelines
APWA - American Public Works Association
MUTCD - Manual on Uniform Traffic Control Devices
WSDOT - Washington State Department of Transportation

2. Public Streets External to Subdivisions

A. Pursuant to Transportation Development Code section 14.60.110, the developer of land as described in that section is required to install street frontage improvements. The cross section and the extent of the street frontage improvements shall be determined by the review engineer based upon the most currently adopted provisions and editions of the Bellevue City Code, this *Design Manual,* adopted City plans, and the Comprehensive Plan. Pavement specifications shall be as shown in *Design Manual* Drawings DEV-8 and DEV-9, and applicable ROW drawings. Intersection setback and sight distance requirements are as specified in *Design Manual* Drawings TE-1, TE-2, and TE-3; and *Design Manual* Standards 21 and 22. Roadway sight distance, horizontal and vertical alignment, and other design criteria are as specified in the AASHTO, WSDOT, and APWA design manuals.

B. Provision of a four-foot planter strip with landscaping or drainage swale between the curb and the sidewalk is preferred. Where site conditions preclude provision of a full four-foot planter strip, a narrower planter strip is preferable to none at all. The requirement to provide a planter strip and landscaping between the curb and the sidewalk (outside Downtown) will be determined by the review engineer, based upon site conditions. Landscaping design must conform to Water Utility Code (BCC 24.02) requirements for water conservation. Landscaping requirements for Downtown are specified by Land Use Code 20.25A.060.

C. All new public streets will be named by the City's Parcel and Address Coordinator. Street signing shall be provided by the developer per *Design Manual* Drawings TE-21, TE-22A and TE-23A, and TE-24. The developer shall coordinate with the Transportation Department inspector prior to sign installation to determine appropriate sign locations.

3. Public Streets Internal to Subdivisions

A. Access for ten or more single family lots in new subdivisions must be provided by public streets within dedicated right of way.

B. Pavement and right-of-way widths for public streets in new subdivisions shall be determined by the provision of on-street parking and the number of single-family lots to be served, as illustrated in Table 1 below.

Table 1. Public Streets Internal to Subdivisions

Parking[1]	Number of Single-Family Lots	Number of Lanes	Paved Width – Minimum (Feet)	Right-of-Way Width– Minimum (Feet)
None	10 to 15	2 lanes (detail A)[2]	20	35
One side	10+	2 lanes (detail B)[2]	24	45
Both sides	10+	2 lanes (detail C)[2]	28	50

(1) Requirement for provision of on-street parking shall be at the discretion of the review engineer. Preferred width of new public streets is 24 feet.

(2) See Design Manual Drawing DEV-4 for details.

C. See Transportation Development Code section 14.60.190 and *Design Manual* Standard 14 for sidewalk requirements and dimensions.

D. Provision of a four-foot planter strip with landscaping or drainage swale between the curb and the sidewalk is preferred. Where site conditions preclude provision of a full four-foot planter strip, a narrower planter strip is preferable to none at all.

E. All new public streets will be named by the City's Parcel and Address Coordinator. Street signing shall be provided by the developer per *Design Manual* Drawings TE-21, TE-22A and TE-23A, and TE-24. The developer shall coordinate with the Transportation Department inspector prior to sign installation for appropriate sign locations.

4. Private Roads

Definition: A way, located on private property, open to vehicular ingress and egress established as a separate tract or easement for the benefit of three to nine adjacent properties or dwelling units.

A. Private roads which serve or will serve from three to nine lots must be a minimum of 20 feet wide, placed in an easement or tract having a minimum width of 25 feet. See Transportation Development Code section 14.60.190 for nonmotorized facility requirements. Where nonmotorized facilities are required, the width of the private road easement or tract shall be increased to 30 feet, and a public easement encompassing the nonmotorized facility may be required.

B. Private roads in commercial planned unit developments or in single-family or multi-family planned unit developments containing three or more lots or dwelling units must have a minimum pavement width of 24 feet, with a five-foot-wide sidewalk on at least one side and sufficient off-street parking. The 24-foot minimum pavement width in a planned unit development is to accommodate the more intense activity generated by higher density. A public easement encompassing the nonmotorized facility may be required.

C. The pavement, easement, and tract widths stated in this section are minimums. Private road width requirements may be increased at the discretion of the review engineer if necessary for safe vehicle movement or to accommodate grading, utilities, on-street parking, turning movements or nonmotorized facilities. In a residential development, provision of on-street parking is encouraged by providing some private road segments with a minimum width of 24 feet (to allow parking on one side) or a minimum width of 28 feet (to allow parking on both sides). Turning movements, sight lines and emergency vehicle clearance must also be considered when designing to accommodate on-street parking on private roads. Where a private road is widened to allow parking, such parking areas may be constructed with a pervious surface to reduce water runoff.

D. Where public street improvements exist, the entrance to a private road shall be constructed with a driveway approach rather than a curb return. See *Design Manual* Drawings DEV-7A, DEV-7C, DEV-7D, DEV-7E and DEV-7F. A curb return may be constructed with approval of the review engineer if the private road entrance meets the criteria for a private intersection as specified in *Design Manual* Standard 6. At the discretion of the review engineer, a private road that is less than 24 feet wide may be required to flare out to a width of at least 24 feet in the driveway approach area in order to accommodate expected turning movements.

E. Private roads shall be limited to a grade of 10% or less for 20 feet past the back of the driveway approach and shall be limited to a maximum grade of 15% thereafter. If a driveway approach is not required, the review engineer will determine the start of measure for the 10% grade to accommodate sight distance requirements per *Design Manual* Standards 21 and 22 and future road improvements. See Table 2 (Landing Grades for Private Roads and Driveways).

F. Private roads shall be paved full-width for their entire length. See *Design Manual* Standard 11 for curb and gutter requirements.

G. Private roads shall be aligned with driveways, private roads and public streets located on the opposite side of the street. Deviations from this requirement must be approved by the review engineer. Where compliance with this requirement is not possible, private roads shall be offset at least 100 feet from driveways, private roads, and public streets located on the opposite side of the street. The offset distance shall be measured from Point A to Point A as shown in *Design Manual* Drawings DEV-7A, DEV-7D, DEV-7E, and DEV-7F. Deviations from this requirement must be approved by the review engineer.

H. Private roads shall be separated a minimum distance of 100 feet from adjacent driveways or private roads measured from Point A to Point A. Point A is defined in *Design Manual* Drawings DEV-7A, DEV-7D, DEV-7E and DEV-7F. Deviations from this requirement must be approved by the review engineer. Where compliance with this requirement is not possible, the private road shall be separated as far as possible from adjacent driveways or private roads. In no case shall the separation distance be less than 20 feet.

I. Private roads shall be separated a minimum distance of 150 feet from the nearest parallel public street. The separation distance shall be measured from Point A of the private road approach to the nearest edge of the travel lane of the public street. Point A is defined in the *Design Manual* Drawings DEV-7A, DEV-7D, DEV-7E, and DEV-7F. Where compliance with this requirement is not possible, the private road shall be separated as far as possible from nearest parallel public street. In no case shall the separation distance be less than 20 feet.

J. The City shall not permit more than one private road opening on any property having a street frontage of 200 feet or less. This paragraph shall not apply if the property's street frontage is less than 200 feet and the property is at least three acres in area.

K. Except as stated in paragraphs A through J above, all private roads shall be constructed to public street standards per the specifications shown in *Design Manual* Drawings DEV-8 and DEV-9 and *Design Manual* Standard 11 (for curb and gutter requirements). The review engineer may allow modifications such as an inverted crown or a thickened asphalt edge rather than curb, provided that storm water treatment will be adequate and safety will not be compromised. A geotechnical analysis of the proposed private road design may be required at the discretion of the review engineer.

L. New private roads will be named by the City's Parcel and Address Coordinator. Appropriate street name signing shall be provided by the developer per *Design Manual* Drawings TE-21, TE-22B, TE-23B and TE-24. The developer shall coordinate with the Transportation Department inspector prior to sign installation to determine appropriate sign locations.

5. Driveways and Driveway Approaches

Definition: A private way of vehicular ingress and egress to a site, extending into the site from a public street or private road.

A. Driveways serve:

(1) one residential lot (residential driveway); or,

(2) two residential lots (residential joint-use driveway); or,

(3) as access to commercial development (commercial driveway).

B. Driveway approaches provide the transition from the street to the driveway or private road. Where public street improvements exist, the driveway approach shall be a formed concrete structure as specified in *Design Manual* Drawings DEV-7A, DEV-7C, DEV-7D, DEV-7E and DEV-7F. Where public street improvements do not exist, the driveway approach shall be asphalt and constructed as specified in *Design Manual* Drawing DEV-7B. If there is a taper from the driveway to the driveway approach, the taper design shall be as specified by the review engineer.

C. Residential and residential joint-use driveways must be paved full width for the entire length.

D. For commercial driveways located on arterials, no parking stalls shall be located closer than 20 feet from the face of curb (or the edge of the driving lane if there is no curb) in order to preclude conflicts with entering vehicles. No such clear area is required for driveways serving multifamily developments on non-arterial streets.

E. All driveways shall be 90 degrees to the street, unless designated as right turn only.

F. All driveways shall be aligned with driveways, private roads, and public streets located on the opposite side of the street. Deviations from this requirement must be approved by the review engineer. Where compliance with this requirement is not possible, driveways shall be offset at least 100 feet from driveways, private roads, and public streets located on the opposite side of the street. The offset distance shall be measured from Point A to Point A. Point A is defined in the *Design Manual* Drawings DEV-7A, DEV-7D, DEV-7E and DEV-7F. Deviations from this requirement must be approved by the review engineer.

G. All driveways shall be separated a minimum distance of 100 feet from any other parallel driveway or private road. The separation distance shall be measured from Point A to Point A. Point A is defined in the *Design Manual* Drawings DEV-7A, DEV-7D, DEV-7E and DEV-7F. Where compliance with this requirement is not possible, driveways shall be separated as far as possible from adjacent driveways and private roads. In no case shall the separation distance be less than 20 feet.

H. All driveways shall be separated a minimum distance of 150 feet from the nearest parallel public street. The separation distance shall be measured from Point A of the driveway to the nearest adjacent edge of the travel lane of the public street. Point A is defined in the *Design Manual* Drawings DEV-7A, DEV-7D, DEV-7E and DEV-7F. Where compliance with this requirement is not possible, driveways shall be separated as far as possible from the nearest adjacent parallel public street. In no case shall the separation distance be less than 20 feet.

I. The City shall not permit more than one driveway opening on any property having a street frontage of 200 feet or less. This paragraph shall not apply if the property's street frontage is less than 200 feet and the property is at least three acres in area. The review engineer may allow an exception to this requirement if safety or traffic operations will be improved with one or more additional driveways.

J. Where the building façade or other design element is less than ten feet behind the sidewalk (as is typical Downtown), both pedestrian and vehicular sight distance shall be maintained. Sight distance and setback requirements shall be specified per *Design Manual* Drawings TE-1, TE-2, and TE-3 and *Design Manual* Standards 21 and 22.

K. No raised object (e.g. fire hydrants, light poles, power poles, and street trees) shall be placed or allowed to remain within ten feet of the driveway edge. The separation distance shall be measured from point A as shown in *Design Manual* Drawings DEV-7A, DEV-7D, DEV-7E and DEV-7F, or as otherwise required by the review engineer.

L. All driveways shall be limited to a grade of 10% or less in the driveway approach area, as listed in Table 2 below, and shall be limited to a maximum grade of 15% thereafter. If a driveway approach is not required, the review engineer will determine the start of measure for the 10% grade to accommodate sight distance requirements per *Design Manual* Drawings TE-1, TE-2 and TE-3 and *Design Manual* Standards 21 and 22. Grade changes must be rounded off so vehicles do not bottom out, and so that abrupt grade changes do not interfere with the sight distance requirements.

Table 2. Landing Grades for Private Roads and Driveways

Access Types	Non-Arterial (max. grade/min. length past driveway approach)	Arterial (max. grade/min. length past driveway approach)
Single-Family Residential, Driveway	10%/20 feet	10%/20 feet
Single-Family Residential, Private Road	10%/20 feet	10%/20 feet
Commercial with parking garage at back of sidewalk	To be determined by the review engineer	To be determined by the review engineer
Commercial with no parking garage at back of sidewalk	10% / 20 feet	7% / 30 feet

M. Minimum residential driveway widths shall be as shown in Table 3 below. Required driveway widths will be specified by the review engineer. A greater width, but not more than 30 feet, may be considered for single-family and duplex residences with multiple car garages.

Table 3. Residential Driveway Widths

Access Road Type	Number Of Single Family Lots	Paved Width Minimum (Feet)	Easement Width Minimum (Feet)
Driveway	1	10	N/A
Joint-Use Driveway	2	16	20

N. The width of commercial driveways, including driveways for multifamily development, shall be as required by the review engineer. Two-lane commercial driveways should generally be 26 to 30 feet wide, with 30 feet preferred on the approach to an arterial street. Two-way 36-foot wide multifamily and commercial driveways will be allowed when separate left- and right-turn exit lanes are required by the review engineer. A two-way commercial driveway wider than 36 feet may be approved by the review engineer where a substantial percentage of oversized-vehicle traffic exists.

6. Private Intersections

A private intersection opening shall be designed per *Design Manual* Drawing DEV-2 and *Design Manual* Standard 9 if permitted by the review engineer. See BCC 14.60.160 for additional requirements regarding private intersections. When a private intersection opening is permitted, the following criteria must be met in addition to the requirements of BCC 14.60.160:

A. A 100-foot minimum storage area shall be provided between the face of curb (or edge of travel lane where no curb exists) and any turning or parking maneuvers within the site; and,

B. The opening is at least 150 feet from the near side face of curb (or edge of travel lane where no curb exists) of the nearest intersecting street; and,

C. The opening is at least 100 feet away from any other driveway on the property frontage under the control of the property owner.

7. Street End Designs

A. Vehicle turnaround facilities required by Transportation Development Code section 14.60.170 shall be provided in accordance with this section and *Design Manual* Drawing DEV-1.

B. A hammerhead per *Design Manual* Drawing DEV-1 may be used to fulfill the requirement to provide a turnaround facility where the street serves (or will serve) nine or fewer residences.

C. A circular turnaround per *Design Manual* Drawing DEV-1 shall be provided for streets that serve (or will serve) ten or more residences.

D. Alternative street end designs may be allowed subject to review and approval by the review engineer and the fire marshal.

E. The maximum cross grade of a street at the street end shall be 8%.

8. Medians

A. A median shall be in addition to, not part of, the specified street width. Medians shall be designed so as not to limit turning radius or sight distance at an intersection. Pedestrian access across medians shall be as required by the review engineer and shall conform with the Americans with Disabilities Act standards.

B. Medians shall be designed so as to allow for the full width needed in adjacent lanes for any existing or planned bicycle facility.

C. Median edges shall be cement concrete traffic curb, provided that where emergency vehicle access across the median is required, the curb shall be a mountable type. See Design Manual Drawing TE-10.

9. Intersection Design

A. Intersection traffic control shall be designed as specified in the MUTCD and by the review engineer.

B. Intersections shall be designed to accommodate the design vehicle appropriate for the highest classified street forming the intersection. The intersection design shall take into account the presence of any designated truck route, bus route, or school bus route. All elements of the intersection shall be designed so the design vehicle will not encroach onto curbs, sidewalks, traffic control devices, medians, or the travel lanes of opposing travel flow. Minimum design vehicle shall be an AASHTO SU-30 vehicle unless otherwise approved by the review engineer.

C. Geometric Design Requirements

(1) The angle of intersection of two streets shall be 85 degrees to 95 degrees unless amended by the review engineer.

(2) The minimum distance between adjacent parallel non-arterial streets shall be 150 feet, measured from nearest curb edge to nearest curb edge.

(3) Minimum curb radius at intersections shall be as shown in Table 4 below:

Table 4. Minimum Curb Radius at Intersections

Intersection Type	Curb Radius Dimension (ft)
Non-Arterial Street	25
Arterial	30
Bus Route	35
Downtown	35

D. The line of sight for drivers at intersections shall not be obstructed. The area to be kept clear of obstructions to sight is as specified in Transportation Development Code sections 14.60.240 and 14.60.241 and *Design Manual* Drawings TE-1, TE-2, and TE-3.

10. Bridges and Retaining Walls

A. All bridges, whether on public streets or private roads, shall meet the minimum requirements set forth in the latest edition of *AASHTO LRFD Bridge Design Specifications,* the AASHTO Guide Specifications for LRFD Seismic Bridge Design, and the WSDOT Bridge Design Manual. Vehicular live load design criteria shall be HL-93, as modified by the WSDOT Bridge Design Manual, except as allowed by the City of Bellevue Transportation Director. Additional loading and design considerations may be required by the Fire Marshal or the Transportation Director.

B. All bridges shall match the full width and configuration of the street, private road, or path being served (traveled way plus curb, sidewalk, walkway, bike lane, equestrian lane, and shoulder on one or both sides). Requirements of utilities shall be considered. Traffic barrier and pedestrian railing or combination traffic barrier/pedestrian railing shall meet AASHTO specifications and the requirements of the WSDOT Bridge Design Manual. Vertical clearance shall be a minimum of 16.5 feet (or state standard, whichever is greater).

C. Retaining walls supporting or protecting public transportation infrastructure, whether in right of way or on private property, shall meet the minimum requirements set forth in the latest edition of the WSDOT Bridge Design Manual.

D. All information required to create the Bridge Record file as described in Chapter 1.09 of the WSDOT State Bridge Inspection Manual shall be supplied by the developer prior to acceptance of the finished structure by the Transportation Department.

11. Curb and Gutter

A. Cement concrete traffic curb and gutter shall be used for street edges whenever possible and shall always be used under the following conditions:

(1) On all public streets.

(2) In drainage low spots where special drainage facilities are required.

(3) On private roads with grades greater than 8%.

B. Cement concrete traffic curb shall be used for edges of islands and medians, provided that where emergency access across the median is required, the curb shall be a mountable type.

C. All curb and gutter shall be constructed as specified in *Design Manual* Drawing TE- 10.

12. Curb Ramps

Definition: A ramp cut into a roadway curb to allow access for physically challenged pedestrians to and from sidewalks and streets.

A. In accordance with state law and with federal guidelines established by the Americans with Disabilities Act, curb ramps shall be provided at all sidewalks, paths, and pedestrian crossings with curb ramp sections or elevation changes (where crossing is permitted). Ramps shall be designed as detailed in *Design Manual* Drawings TE- 12 and TE-13 and placed whenever possible as shown in *Design Manual* Drawing TE-7. Alternative placement must be approved by the review engineer.

B. Every ramp constructed per section A above which serves one end of a crosswalk shall be matched by another ramp at the other end of the crosswalk. No ramp shall be required if there is no curb or pedestrian facility at the other end of the crosswalk. Crosswalks may be marked or unmarked.

13. Guard Rail and Safety Railing

A. Guard rail shall be provided and installed by the developer as directed by the review engineer or the inspector.

B. All guard rails along public and private roadways shall conform to the criteria of the WSDOT *Design Manual.*

C. Safety railing shall be provided and installed by the developer per the installation warrants of *Design Manual* Drawing TE-33 or as directed by the review engineer or the inspector.

D. All safety railing shall conform to the requirements of *Design Manual* Drawings TE-34, 35, and 36.

14. Sidewalks and Nonmotorized Facilities

A. See *Design Manual* Drawings DEV-17 through DEV-20 for width and subgrade specifications for each non-motorized facility type. Non-motorized facility construction shall, in addition to complying with the design requirements of this document, conform to current WSDOT *Standard Specifications.* Where feasible, the design of such facilities shall recognize AASHTO standards such as the "Guide for the Development of Bicycle Facilities." The width of the easement shall be established by the review engineer but shall extend at least to the back of such sidewalk or facility. See also the *City of Bellevue Pedestrian & Bicycle Transportation Plan Report* for additional design elements and city project listings for pedestrian and bicycle projects.

B. Pedestrian Facility Construction

(1) Limited-purpose path construction:

a. Acceptable surface materials are crushed rock and wood chips.

b. The maximum grade shall not exceed 15%. Depending upon site conditions, stairs and/or switchbacks may be required. For grades greater than 5%, the review engineer may specify the type of paving material to be used.

c. If equestrian use is anticipated, ten feet of vertical clearance is required.

(2) Multi-purpose path construction:

a. Acceptable surface materials are crushed rock, wood chips, and asphalt.

b. The maximum grade shall not exceed 10%. Depending upon site conditions, stairs and/or switchbacks may be required. For grades greater than 5%, the review engineer may specify the type of paving material to be used.

c. If equestrian use is anticipated, ten feet of vertical clearance is required.

(3) Paved path construction:

a. Acceptable surface materials are asphalt and concrete.

b. The edges of asphalt paths shall be defined by inverted thickened edges along both sides to prevent edge deterioration.

c. The maximum grade shall not exceed 10% (5% when bicyclist use is anticipated). Depending upon site conditions, stairs and/or switchbacks may be required. The review engineer may specify special paving and other treatment to be used on grades greater than 5%.

d. Paths shall be located a minimum of five feet from the edge of the vehicular travel way. A physical barrier may be required in lieu of the five-foot separation when conditions dictate, particularly when bicyclist use is anticipated.

e. A two-foot-wide graded shoulder is required on either side of a paved bicycle pathway. The review engineer may require a wider graded shoulder if heavy pedestrian or equestrian use is anticipated.

f. If equestrian use is anticipated, ten feet of vertical clearance is required.

g. When asphalt paved paths are used, the widths shall correspond to the widths required for concrete sidewalks.

(4) Concrete sidewalk construction:

a. All sidewalks shall be constructed with five-inch-thick Class 3000 concrete with a non-slip broom finish, except Downtown. For Downtown sidewalk construction standards, see also Land Use Code 20.25A.060. Downtown projects are also subject to special requirements through the design review process.

b. At driveways, the concrete shall be six inches thick.

c. Specialty finishes may be allowed with the approval of the review engineer when the proposed material will provide a non-slip surface when wet and the adjacent property owner agrees to maintain, repair, and replace the specialty material at her/his own expense, even when the maintenance is made necessary because of City work.

d. All lids for junction boxes and utility vaults located within the sidewalk shall be of a non-slip/non-skid type per ADA requirements subject to approval by the review engineer.

e. The width of a sidewalk does not include the curb. Sidewalks shall maintain their full width (5 to 8 feet as referenced below) around one side of obstructions that cannot be relocated. Concrete sidewalk widths shall be as follows:

- public streets and private roads internal to subdivisions and short subdivisions: five feet (minimum)
- non-arterial streets external to subdivisions and short subdivisions: five feet to six feet
- arterial streets external to subdivisions and short subdivisions: six to eight feet (width to be determined by the review engineer)
- Downtown: See Land Use Code 20.25A.060.

f. Sidewalks shall meander no more than four feet from the curb at pedestrian crossings and at driveways.

C. Bicycle Facility Construction

(1) Separated bicycle path – See requirements for paved path construction. Acceptable surface materials are asphalt and concrete.

(2) Bicycle lane

a. Acceptable surface materials are asphalt and concrete.

b. A bicycle lane on a public roadway shall be a minimum of five feet wide when curb and gutter is in place. The distance shall be measured from the face of curb to the center of the fogline that designates the bicycle lane. A cement concrete traffic curb and gutter is required. See *Design Manual* Drawing TE- 10.

c. A bicycle lane on a public roadway shall be a minimum of four feet wide when no curb and gutter is in place. The width shall be measured from the edge of pavement to the center of the bicycle lane marking. A minimum two-foot wide graded shoulder is required adjacent to the paved surface.

(3) Shared roadway

a. Acceptable surface materials are asphalt and concrete.

b. The curb lane of a shared roadway shall be a minimum of 14 feet wide for flat or downhill sections and 15 feet wide for uphill sections. The distance shall be measured from the face of curb to the center of the lane marking.

D. Safety railing shall be provided and installed by the developer when, in the opinion of the review engineer, warrants for safety railing as shown in *Design Manual* Drawing TE-33 are met, or as directed by the review engineer or the inspector.

E. When hard surfaces are disturbed, all junction boxes within the hard surface shall be replaced with new junction boxes with non-skid lids.

15. Fixed Objects

Definition: An object having properties greater than a four-inch by four-inch wooden post.

A. A clear recovery area is a consideration when placing fixed objects along the roadside or within medians. The intent is to provide a traversable recovery area when opportunity allows. The design clear zone, as defined by the WSDOT Design Manual, is ten feet for roadways with speed limit of 35 mph or under. See the WSDOT Design Manual for speed limits above 35 mph. It is acknowledged by the WSDOT Design Manual that within urban areas, it will not always be practical to provide this ten foot clear zone area.

B. When placing new fixed objects along a roadside or along a median with a traffic curb, attempt to select locations with the least likelihood of an impact by an errant vehicle. Always meet the minimum operational offset of three feet from the face of curb to the face of the object. This offset distance may be modified to 1.5 feet at the discretion of the review engineer (except for street light poles and signal equipment, for which the minimum offset distance shall be three feet).

C. When placing new fixed objects along a roadside or median that does not have a curb, meet the clear zone requirements listed below. If the clear zone requirement cannot be met, a justification is required and must be approved by the review engineer.

(1) Minimum clear zone offset distance from roadside or median without curb and with a speed limit 35 mph or less is ten feet. Modifications must be approved by the review engineer.

(2) Minimum clear zone offset distance from roadside or median without curb and with a speed limit of 40 mph or greater shall be determined from the WSDOT Design Manual. Modifications must be approved by the review engineer.

D. Fixed objects shall not be located closer than ten feet to the edge of a driveway, identified as Point A in the *Design Manual* Drawings DEV-7A, DEV-7D, DEV-7E, and DEV-7F unless a modification is approved by the review engineer. Fixed objects shall be located such that they do not violate the vehicle and pedestrian sight obstruction requirements of Transportation Standards 21 and 22. See *Design Manual* Drawings TE- 1, TE-2 and TE-3 as well. The review engineer may modify this requirement if the modification will not compromise the safety of pedestrian or vehicular traffic.

16. Breakaway Objects

Definition: An object having properties up to and including that of a four-inch by four-inch wooden post.

The following separation distances shall apply:

A. Minimum operational separation distance from roadside or median with traffic curb is 1.5 feet. Modifications must be approved by the review engineer.

B. Minimum operational separation distance from roadside or median without traffic curb is ten feet. Modifications must be approved by the review engineer.

17. Mailboxes

A. Mailboxes shall be clustered together where practical and where reasonably convenient to the houses being served. For groupings of three or more boxes within a new residential development, a neighborhood delivery and collection box unit consisting of locked boxes on a single pedestal shall be provided. For clustered mailboxes or units, access to the boxes shall be provided on both the street and sidewalk sides.

B. When mailboxes are located in the sidewalk, the sidewalk shall be widened to provide the full design width around the mailboxes.

C. When pedestrian access is available to the back of a mailbox or mailbox cluster, units allowing access to the boxes from both sides shall be installed, if available.

D. In the case of new street construction, or street reconstruction that requires mailboxes to be installed or moved, the designer and builder shall coordinate with the station master or postmaster at the post office that serves the location. Mailbox locations approved by the U.S. Postal Service, and which are approved by the City of Bellevue Transportation Department to facilitate vehicle, bicycle and pedestrian safety, shall be shown on approved street construction plans and installed at the approved locations. Temporary mailbox locations may be allowed during construction, if acceptable to the U.S. Postal Service and the City of Bellevue Transportation Department.

E. Mailboxes shall be installed as follows:

(1) The base of the box shall be 41 to 45 inches above the street.

(2) On non-arterial streets, the front of the mailbox shall be 6 to 8 inches behind the vertical curb face or edge of pavement.

(3) On arterial streets, the front of the mailbox shall be one foot behind the back of sidewalk on walking delivery routes, or 6 to 8 inches behind the curb face on vehicular delivery routes.

(4) The mailbox shall be placed on posts strong enough to give firm support, but not to exceed the breakaway characteristics of a four-inch by four-inch wood post or 1.5-inch diameter pipe. See *Design Manual* Drawing DEV-11.

(5) Additional non-breakaway fixtures shall not be installed adjacent to mailbox locations. See *Design Manual* Sections 15 and 16.

F. Where feasible, installation of vehicle pullouts for mailbox access may be required by the Transportation Department review engineer.

18. Metal Covers Within Streets

Where feasible, manhole lids, valve boxes and any other metal covers shall be located outside the vehicle tire paths of through lanes on any City street and outside of bicycle facilities. Preferred locations for metal covers are:

A. Outside the paved surface.

B. In a turn lane, where vehicle speeds and volumes are typically lower.

C. In parking lanes or on the shoulder, if not used for bicycle travel.

D. Near the center of a through lane, typically five to seven feet from the centerline of a two-lane street.

E. On the line separating two lanes, except for utilities which require frequent access or maintenance.

F. No traffic signal/street lighting/communication junction boxes shall be placed in the roadway.

19. Street Illumination and Traffic Signals

A. Street lighting system designs shall follow the City's "Street Lighting Design Guide" (see Appendix A) and must be stamped by a licensed engineer experienced with lighting design**.**

B. Street lighting system design requirements are as follows:

(1) Designs shall contain luminaire with pole spacing and type, illumination level, uniformity ratio, line losses, power source, the electrical and physical layout, installations details, plans and specifications.

(2) As-built street lighting plans for City-owned systems shall be provided to the City on 22-inch by 34-inch plan sheets prior to final occupancy, final plat approval or prior to release of an assurance device.

(3) Lighting in residential plats is typically designed and installed by Puget Sound Energy after City approval of design.

(4) Street lighting systems shall be designed to be accessible by a wheeled vehicle weighing 30,000 lbs.

(5) Contactor cabinets equipped with electrical meters, time clocks, circuit breakers, and other required components are required on arterial installations, or as required by the review engineer.

(6) The exact location of the power source shall be indicated together with the remaining capacity of that circuit. System continuity and extension shall be provided.

C. Street lighting is allowed but not required along private roads. Street lighting systems for private roads shall be designed and constructed on a separate power source from the public street lighting system. All street light maintenance, installation, and power costs for private road systems shall be paid by the property owner, homeowner, or homeowners' association.

D. Traffic signal designs shall be prepared by a licensed engineer experienced in traffic signal design. The engineer shall use common City practices, standard drawings, and City special provisions to the WSDOT standard specifications. A signal warrant study prepared by a licensed engineer shall be required for all new signal installations.

E. Communication systems that are modified by the developer will require a cutover plan, and may require new cable between existing splice locations.

F. A minimum of two three-inch conduits shall be provided and installed across the frontage of the project with Type 7 junction boxes at each end.

G. Street light pole bases shall be removed in their entirety, wherever necessary.

H. A combined street tree and street light plan is required for review and approval prior to completion of engineering and landscape plans for their installation. The goal is to provide the optimum number of street trees while not compromising the light and safety provided by streetlights. Street trees and street lights must be shown on the same plan sheet with the proper separation (generally 25 feet apart) and the proper spacing from driveways (ten feet from Point A in standard drawings DEV-7A, DEV-7D, DEV-7E and DEV-7F).

20. Channelization and Signing

A. The review engineer shall review and approve all traffic control devices. All traffic control devices used on public streets and private roads shall conform to the MUTCD.

(1) All signs such as street name, parking, stop, dead end, speed limit, and nonmotorized indicators shall be clearly indicated on the plans and will be field-located by the review engineer and the inspector. It is the responsibility of the property owner to insure that signs are maintained in good condition until the development and right-of-way are accepted by the City. Any damaged signs must be replaced by the property owner at her/his expense.

(2) All channelization and pavement markings such as raised pavement markers, paint, thermoplastics, etc., shall be pre-marked by a City-approved striping contractor, and the layout approved by the review engineer, prior to permanent installation by the contractor.

(3) Temporary traffic control and construction zone signing and barricades to insure traffic safety during construction activities shall be provided by the developer.

B. Channelization and signing plans shall be prepared by a licensed engineer.

21. Sight Distance - Vehicles

A. For the purposes of this standard, sight obstructions are objects that block or obscure the view of motor vehicle operators at intersections. An intersection shall include: the intersection of two public streets, the intersection of a commercial driveway with a public street, the intersection of a residential driveway with a public street, and the intersection of a private road with a public street. Sight obstructions are not permitted above a line two feet above the street surface and below a line seven-and-a-half feet above the street surface. This line is reduced from seven-and-a-half feet to six feet within the setback areas for residential driveways.

B. Notwithstanding any other provision of this standard, development proposals shall demonstrate that no vehicle shall be parked; or any sign, fence, rail, hedge, shrubbery, natural growth, or other obstruction installed; which obstructs the view of motor vehicle operators at an intersection within the sight areas established in *Design Manual* Drawings TE-1, TE-2, TE-3 and between the height limits established herein.

C. The sight area at an intersection is defined as the area bounded by setback lines, or bounded by setback lines and the edge of the travel lane (see *Design Manual* Drawings TE-1, TE-2 and TE-3.) Setbacks for intersection types are as specified in the following paragraphs:

(1) Major Street/Minor Street, Major Street/Commercial Driveway, or Major Street/Private Road. Intersections of this type have no control or flashing yellow on the major street, and have a stop sign or flashing red signal on the minor street. Private commercial driveways (which may or may not have a stop sign) used by the public for entering any City street are also included in intersections of this type.

The setback line is defined as a line which joins a point in the center of the minor street approach lane located 14 feet back from the edge of the major through-street approach lane (Point A) and a point in the center of the major through-street approach lane (Point B). The location of Points A and B in the minor street approach lane and the major through-street approach lane, respectively, are specified in *Design Manual* Drawing TE-1.

Where the major street is a divided highway, only the left setback line applies. Where the major street is a one-way street, only the setback line toward the direction of approach applies.

Modification: Where major obstacles such as pre-existing permanent structures, elevated contour of the ground, embankments, or other elements preclude the reasonable enforcement of the setback lines specified above, these setbacks may be modified at the discretion of the review engineer. The minor street setback distance to Point A may be reduced from 14 feet to ten feet and the major street Point B location may be modified as follows:

Table 5. Modified Sight Distance Lines

Posted Speed Limit for Major Street	Distance from Center of Intersection to Point B
40 MPH	325 Feet
35 MPH	250 Feet
30 MPH	200 Feet
25 MPH	150 Feet

(2) Uncontrolled Intersection. For intersections with no traffic control on any approach, the setback lines join a point on the approach located 50 feet back from the center of the intersection with points located 80 feet back from the center of the intersection on the right and left hand streets. All points are on the street centerlines. See *Design Manual* Drawing TE-2.

(3) Yield Intersection and T Intersection. Yield intersections have a yield sign on one or both minor street approaches, and no control on the major street approach. The setback lines for yield intersections join a point in the center of the yield approach lane 25 feet back from the edge of the crossing traffic lane with points in the centers of the crossing approach lanes 100 feet back from the center of the intersection. This setback also applies to a T intersection with no restrictive control; in this case the 25-foot setback point is on the stem of the T. See *Design Manual* Drawing TE-2.

(4) Signalized Intersection. For signalized intersection approaches with right-turn-on- red-after-stop permitted, the left setback line joins a point in the center of the minor street approach lane located 14 feet back from the edge of the through-street approach lane (Point A) and a point in the center of the left through-street approach lane (Point B). The location of Point A may be reduced to ten feet subject to approval of the review engineer. The location of Points A and B are specified in *Design Manual* Drawing TE-1.

(5) Residential Driveway Intersection. For the intersection of a residential driveway with a public street, the setback line joins a point in the center of the driveway (Point A) with a point in the center of the through-street approach lane (Point B). The setback distance of Point A from the edge of the traveled lane is ten feet. The location of Point B is specified in *Design Manual* Drawing TE-1.

Modification: When the residential driveway is located on a residential street with a sharp curve adjacent to the driveway, the distance of Point B may be reduced from 150 feet to 100 feet. For residential driveways with major obstacles or other special circumstances obscuring sight distance, the setback distance on the driveway (Point A) may be reduced from ten feet to eight feet (subject to the approval of the review engineer.)

(6) Sightline Setback – Other. For intersections not clearly included in the above types and for which special circumstances obscuring sight distance exists, the review engineer will establish setback lines to the most feasible extent.

D. The review engineer may allow a deviation from the foregoing provisions, including the requirement of a greater sight distance, to meet special circumstances provided that the resulting sight distance is reasonable given the circumstances and is anticipated to meet the intention of the sight distance standards described herein. The review engineer may require or impose additional requirements to mitigate the allowed deviation, including but not limited to: the removal or relocation of fences, vegetation, and the modification of handrails on subject property, adjacent property, or street right-of-way; and the restriction of turning movements by the installation of c-curbs.

E. Sight lines from vehicles to traffic control devices, including but not limited to signs and signals, shall not be obscured by landscaping, street furniture, marquees, awnings, or other such obstructions.

F. Every obstruction of the sort prohibited in this section hereafter installed or permitted to remain shall be deemed a violation of this sight distance standard.

22. Sight Distance - Pedestrians

A. The minimum sight distance for pedestrian safety shall be as shown in *Design Manual* Drawing TE-3 and determined as followed: the driver of an exiting vehicle shall be able to view a one- foot-high object 15 feet away from either edge of the exit lane at the driveway throat when the driver's eye is 14 feet behind the back of the pedestrian walkway.

B. The minimum sight distance as defined in *Design Manual* Standard 22.A shall be maintained at all driveways, buildings, and garage entrances where structures, wing walls, etc., are located adjacent to or in close proximity to a pedestrian walkway.

23. Trench Backfill and Restoration

A. Materials and workmanship shall be in conformance with the WSDOT/APWA *Standard Specifications for Road, Bridge, and Municipal Construction.* Construction shall be in conformance with *Design Manual* Drawings ROW-1 through ROW-9, the details and conditions outlined in the Right-of-Way Use Permit, and the following:

(1) Trench restoration shall be accomplished with a patch or an overlay as required by the Pavement Restoration Requirement Map or the review engineer.

(2) If a patch is used, the trench limits shall be sawcut prior to final patch.

(3) All trench and pavement cuts shall be made by sawcuts or by grinding. The sawcuts or grinding shall have a minimum distance outside the trench width as shown in *Design Manual* Drawings ROW-1 through ROW-9.

(4) If the Right-of-Way Use Permit requires an overlay, then the contractor may use a jackhammer or drum grinder for the cutting of the existing pavement.

(5) Within the top four feet of trenching, backfill shall be crushed surfacing materials or a controlled-density fill material conforming to section 4-04 of the WSDOT/APWA Standard Specifications. Backfill materials must be inspected and accepted by the review engineer.

(6) If the existing material is determined by the inspector to be suitable for backfill and the trench is not perpendicular to a travel lane or driveway, the contractor may use the native material as long as the top eight inches is crushed surfacing material.

(7) Material used for backfill below four feet in depth must be approved by the inspector.

(8) All trench backfill shall be compacted to 95% maximum density, as described in section 2-03 of the WSDOT/APWA *Standard Specifications.*

(9) Backfill compaction shall be performed in eight-inch to 12-inch lifts. The compaction tests shall be performed in maximum backfill increments of two feet. The test results shall be given to the inspector for review and approval prior to paving. Material testing will be required for trench backfill (native or imported), asphalt, and concrete. Testing shall be performed by a certified independent testing laboratory. The cost of testing is the responsibility of the franchise utility or contractor. The number of tests required shall be the same as for asphalt density testing, or as directed by the inspector. Acceptance testing may also be performed by the City materials laboratory as required.

(10) Temporary restoration of trenches for overnight use shall accomplished by using hot mix asphalt (HMA) or steel plates. HMA used for temporary restoration may be dumped directly into the trench, bladed out, and rolled. After rolling, the trench must be filled flush with asphalt to provide a smooth riding surface.

(11) HMA shall be placed to the compacted depth as shown on *Design Manual* Drawings ROW-1 through ROW-9 and as directed by the review engineer. Asphalt cement shall be paving asphalt. Materials shall conform with section 9-02. 1(4) of the WSDOT/ APWA *Standard Specifications.*

(12) Tack shall be emulsified asphalt grade CSS-1 as specified in the WSDOT/APWA *Standard Specifications* and shall be applied to the existing pavement and edges of sawcuts as specified in the WSDOT/APWA *Standard Specifications.*

(13) HMA shall be placed on the prepared surface by an approved paving machine and shall be in accordance with the requirements of the WSDOT/APWA *Standard Specifications,* except that longitudinal joints between successive layers of asphalt concrete shall be displaced laterally a minimum of 12 inches, unless otherwise approved by the inspector. Fine and coarse aggregate shall be in accordance with the WSDOT/APWA *Standard Specifications.* Asphalt concrete over two inches thick shall be placed in equal lifts not to exceed two inches each.

(14) Cuts for trenches in all street surfaces, walks, and driveways shall be either ground or sawcut. Ground joints shall be feathered and shimmed to provide a smooth surface. Feathering and shimming shall be accomplished by raking out the oversized aggregates from the mix. Surface smoothness shall conform to the WSDOT/APWA *Standard Specifications.* The paving shall be corrected by removal and repaving of the trench only.

(15) Compaction of all lifts of asphalt shall be at an average of 92 % of maximum density as determined by WSDOT Test Method 705. The number of tests required per square foot of trenching shall be as follows:

a. One test for less than 50 square feet of trenching area.

b. Two tests for 50 to 100 square feet of trenching area.

c. Three tests for 100-plus to 300 square feet of trenching area.

d. One test for every 200 square feet over 300 square feet of trenching area or every 100 lineal feet of trench, if applicable.

Testing shall be performed by a certified independent testing laboratory. The cost of testing is the responsibility of the franchise utility or contractor. Acceptance testing may also be performed by the City materials laboratory as required. The testing is not intended to relieve the contractor from any liability for the trench restoration. It is intended to show the inspector and the City that the restoration meets these specifications.

(16) All joints shall be sealed using paving asphalt.

B. Contractors performing asphalt restoration work must be pre-qualified by the Transportation Department. To be pre-qualified, a contractor must submit qualifications in writing to the Pavement Manager. Past performance and available paving equipment will be reviewed to determine eligibility for the approved contractor list.

C. A five-year moratorium on pavement excavation and trenching will be enforced following the completion of a new street or street overlay. This requirement restricts all street trenching except in the event of an emergency or as authorized by the City pavement manager per Transportation Development Code section 14.60.250.

D. Asphalt patch depths will vary based upon the classification of the streets being trenched. The asphalt depths shall be shown on the Right-of-Way Use Permit and the work shall be performed as required per *Design Manual* Drawings ROW-1 through ROW-9. The minimum paving depths for all trenching shall be approved by the inspector prior to restoration activity.

E. When trenching occurs within the street shoulder, the shoulder shall be restored to its original or better condition within 30 days of first opening the trench.

F. The final patch shall be completed within 30 days of first opening the trench. This time frame may be adjusted if delays are due to inclement weather or other adverse conditions. Delay of final patch or overlay work must be approved by the review engineer and will require an assurance device to guarantee completion.

G. Any patch or overlay Downtown shall be permanent and completed as soon as possible.

H. Upon completion of asphalt restoration, the restored area shall be swept clear of loose material.


CITY OF BELLEVUE
WASHINGTON

P A R T 2 – Standard Drawings

TRAFFIC ENGINEERING DRAWINGS

TE-1	Sight Distance Setback Lines
TE-2	Sight Distance – Uncontrolled and Yield Intersections
TE-3	Pedestrian Sight Lines
TE-4A	Channelization Lines - A
TE-4B	Channelization Lines - B
TE-5	Raised Pavement Marker Details
TE-6	Pavement Arrow Markings
TE-7	DELETED AS OF JANUARY 9, 2013
TE-7A	Crosswalk Markings
TE-7B	Crosswalk Markings with Median
TE-8	Highway – Rail Grade Crossing Pavement Markings
TE-9A	Precast Traffic Curbs
TE-9B	Precast Traffic Curb Installation
TE-10	Cement Concrete Curbs
TE-11	Sidewalk
TE-12	DELETED AS OF FEBRUARY 12, 2014
TE-12A	Curb Ramp Construction Notes
TE-12B	Cement Concrete Curb Ramp Type 1
TE-12C	Cement Concrete Curb Ramp Type 2
TE-12D	Cement Concrete Curb Ramp Type 3
TE-13	DELETED AS OF FEBRUARY 12, 2014
TE-14	Noncontinuous Left Turn Lane
TE-15A	Left Turn and Two Way Left Turn Lane
TE-15B	Dual Left Turn at Intersection
TE-16	Drop Lanes and Pockets
TE-17	Bicycle Lane Channelization
TE-18	Bicycle Lanes at Intersections
TE-19	Bike Lane Treatment at Right Turn Pocket
TE-20	Bike Lane Marking
TE-21	Sign Installation Details
TE-22A	Street Name Sign – Type 1, Non-Arterial Street
TE-22B	Street Name Sign (Private Road) – Type 1, Non-Arterial Street
TE-23A	Street Name Sign - Type 2, Arterial Street
TE-23B	Street Name Sign (Private Road) - Type 2, Arterial Street
TE-24	Street Name Sign - Types 3A, 3B, & 3C; Mast Arm
TE-25	Rumble Strip and 25 MPH Legend
TE-26	Traffic Circle Dimensions
TE-27	Traffic Circle Details
TE-28	Speed Hump
TE-29	Elongated Speed Hump

TE-30A Raised Crosswalk
TE-30B Raised Crosswalk with Sidewalk Ramp Type 1
TE-30C Raised Crosswalk with Sidewalk Ramp Type 2
TE-31A Raised School Crosswalk Signing
TE-31B Raised Crosswalk Signing
TE-31C At-Grade School Crosswalk Signing
TE-32 Patterned Concrete Entry Treatment
TE-33 Safety Railing Installation Warrants
TE-34 Metal Safety Railing
TE-35 Wood Safety Railing
TE-36 Combination Guardrail & Handrail
TE-37A Memorial Sign Layouts – A
TE-37B Memorial Sign Layouts – B

DEVELOPMENT REVIEW DRAWINGS

DEV-1 Turnaround Facilities
DEV-2 Private Commercial Road/Public Street Intersection
DEV-3 Downtown Sidewalk
DEV-4 Public Street Widths within Subdivisions
DEV-5 DELETED AS OF APRIL 27, 2011
DEV-6 DELETED AS OF APRIL 27, 2011
DEV-7A Driveway or Private Road Approach with Sidewalk (Design A)
DEV-7B Driveway Approach Where No Curb-Gutter Exists
DEV-7C Driveway Approach Where Curb-Gutter Exists (No Sidewalk)
DEV-7D Driveway or Private Road Approach with Sidewalk (Design B)
DEV-7E Driveway or Private Road Approach with Sidewalk (Design C)
DEV-7F Driveway or Private Road Approach with Sidewalk (Design D)
DEV-8 Public Streets Internal To Subdivisions
DEV-9 Typical Public Street
DEV-10 Commercial Project Site – Street Frontage Improvements
DEV-11 Mailbox Stand
DEV-12 Pipe Monument, Case and Cover
DEV-13 Typical Bollard Placement on Pathways
DEV-14 Removable and Fixed Bollard
DEV-15 Root Barrier for Concrete/Paved Walkway
DEV-16 Critical Root Zone beneath Concrete and Asphalt Walkway
DEV-17 Trail Section Dimensions and Materials
DEV-18 Typical Woodchip Trail
DEV-19 Typical Crushed Rock Trail
DEV-20 Asphalt Section for Multi-Purpose and Paved Paths
DEV-21 Directional Bollard
DEV-22 Right Angle "L" Intersection
DEV-23 Brick Paver Installation for Old Bellevue District

RIGHT OF WAY DRAWINGS

ROW-1	Flexible Pavement Patching and Restoration Details – Transverse Cut
ROW-2	Rigid Pavement Patching and Restoration Details – Transverse Cut
ROW-3	Section of Longitudinal Cut
ROW-4	Flexible Pavement Patching and Restoration Details – Longitudinal Cut
ROW-5	Rigid Pavement Patching and Restoration Details – Longitudinal Cut
ROW-6	DELETED AS OF FEBRUARY 12, 2014
ROW-7	Pavement Restoration for Window Cuts
ROW-8	Utility Adjustment Detail
ROW-9	Typical Asphalt Pavement Details

TRAFFIC SIGNAL/STREET LIGHT DRAWINGS

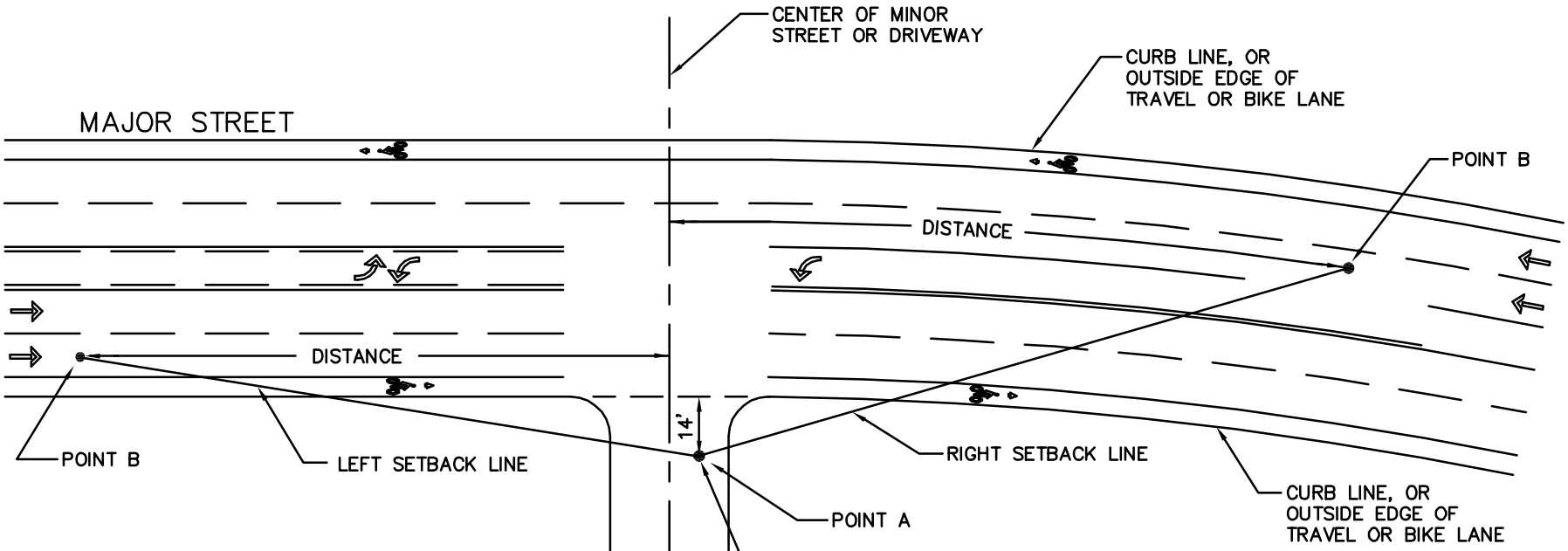
TSSL-1	Roadway Lighting Detail (Concrete Pole)
TSSL-2	Roadway Lighting Detail (Davit Pole)
TSSL-3	Typical Luminaire Locations
TSSL-4	Luminaire Schedule and Illumination Wire Schedule
TSSL-5	Type 1/Type 2 Junction Box on Grade for Landscape Areas
TSSL-6	Type 8 Modified Junction Box
TSSL-7	Communication Junction Box Detail
TSSL-8	Fiber Optic Vault
TSSL-9	Standard Intersection Movements and Head Numbers
TSSL-10	Loop Detector Layout and Bicycle Marking
TSSL-11	Loop Numbering Scheme
TSSL-12	Loop Winding Details
TSSL-13	Loop Detector Detail
TSSL-14	Typical Conduit Placement for Loop Detectors
TSSL-15	Induction Loop Test
TSSL-16	Field Wiring Chart
TSSL-17	DELETED AS OF FEBRUARY 12, 2014
TSSL-18	DELETED AS OF FEBRUARY 12, 2014
TSSL-19	Signal Cabinet Foundation Detail
TSSL-20	Signal and Service Cabinet Foundation Detail
TSSL-21	Service Cabinet Detail
TSSL-22	Service Cabinet Wiring Detail
TSSL-23	Panel Schedule
TSSL-24	Fiber Optic Cabinet
TSSL-25	DELETED AS OF FEBRUARY 12, 2014
TSSL-26	COHU Video Camera Mount – Luminaire Arm Detail
TSSL-27	Video Converter Cabinet Detail
TSSL-28	Signal Head Clearance Detail
TSSL-29	DELETED AS OF FEBRUARY 12, 2014
TSSL-30	DELETED AS OF FEBRUARY 12, 2014


CITY OF BELLEVUE
WASHINGTON

TRANSPORTATION DESIGN MANUAL

TE Drawings (Traffic Operations)


CITY OF BELLEVUE
WASHINGTON



SIGNALIZED INTERSECTION WITH RIGHT ON RED PERMITTED

SPEED LIMIT	DISTANCE (LEFT APPROACH ONLY)
40 MPH	325 FEET
35 MPH	250 FEET
30 MPH	200 FEET
25 MPH	150 FEET

MINOR STREETS, PRIVATE ROADS, AND COMMERCIAL DRIVEWAYS

SPEED LIMIT	DISTANCE
40 MPH	410 FEET
35 MPH	360 FEET
30 MPH	300 FEET
25 MPH	250 FEET

RESIDENTIAL DRIVEWAYS

SPEED LIMIT	DISTANCE
40 MPH	325 FEET
35 MPH	250 FEET
30 MPH	200 FEET
25 MPH	150 FEET

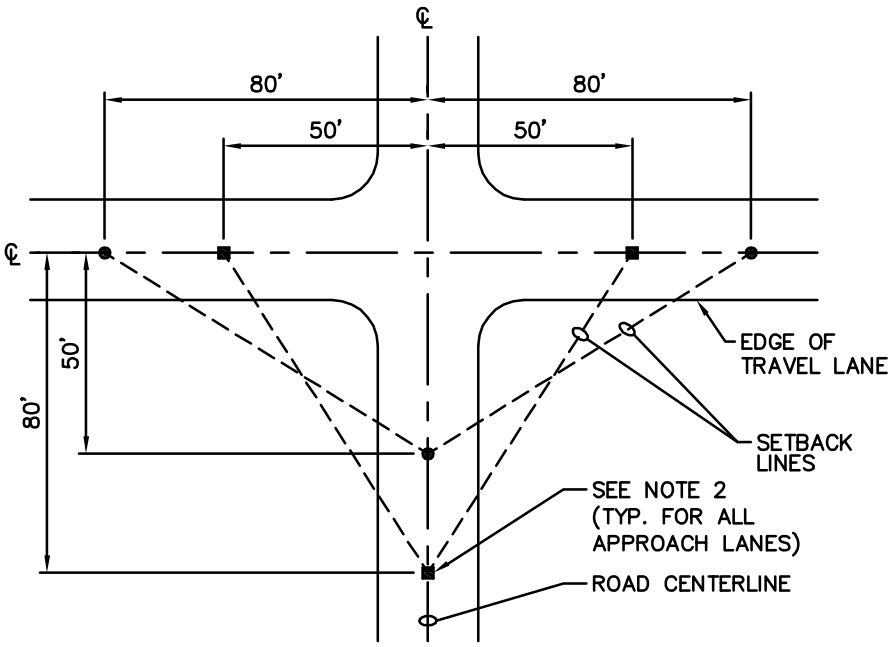
NOTES:

1. SEE DESIGN MANUAL STANDARD 21 (SIGHT DISTANCE – VEHICLES).

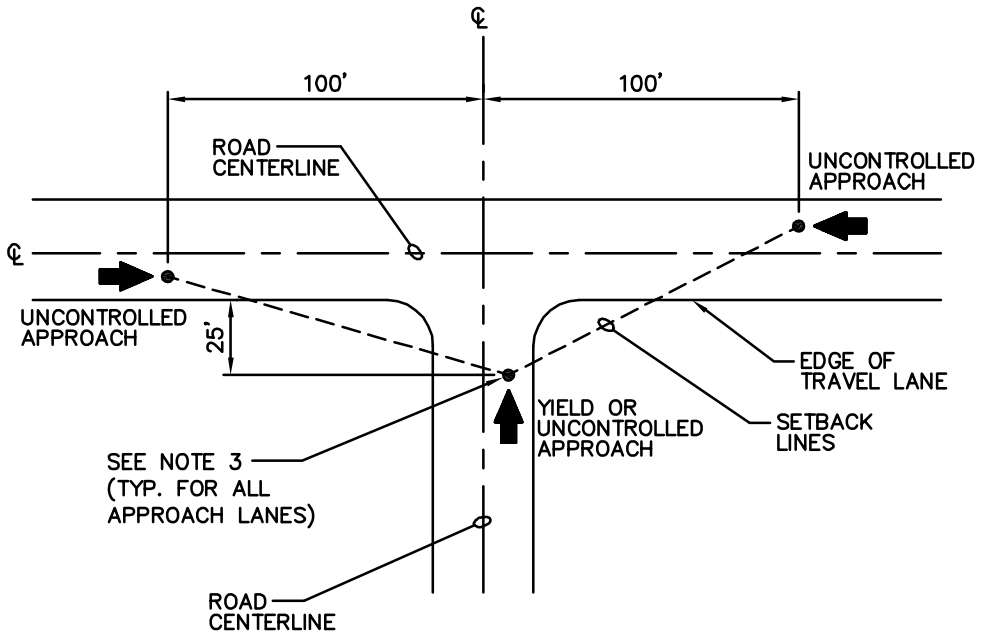
City of Bellevue

SIGHT DISTANCE SETBACK LINES

DRAWING NUMBER	TE-1
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



UNCONTROLLED 4–WAY INTERSECTION



YIELD OR UNCONTROLLED "T" INTERSECTIONS

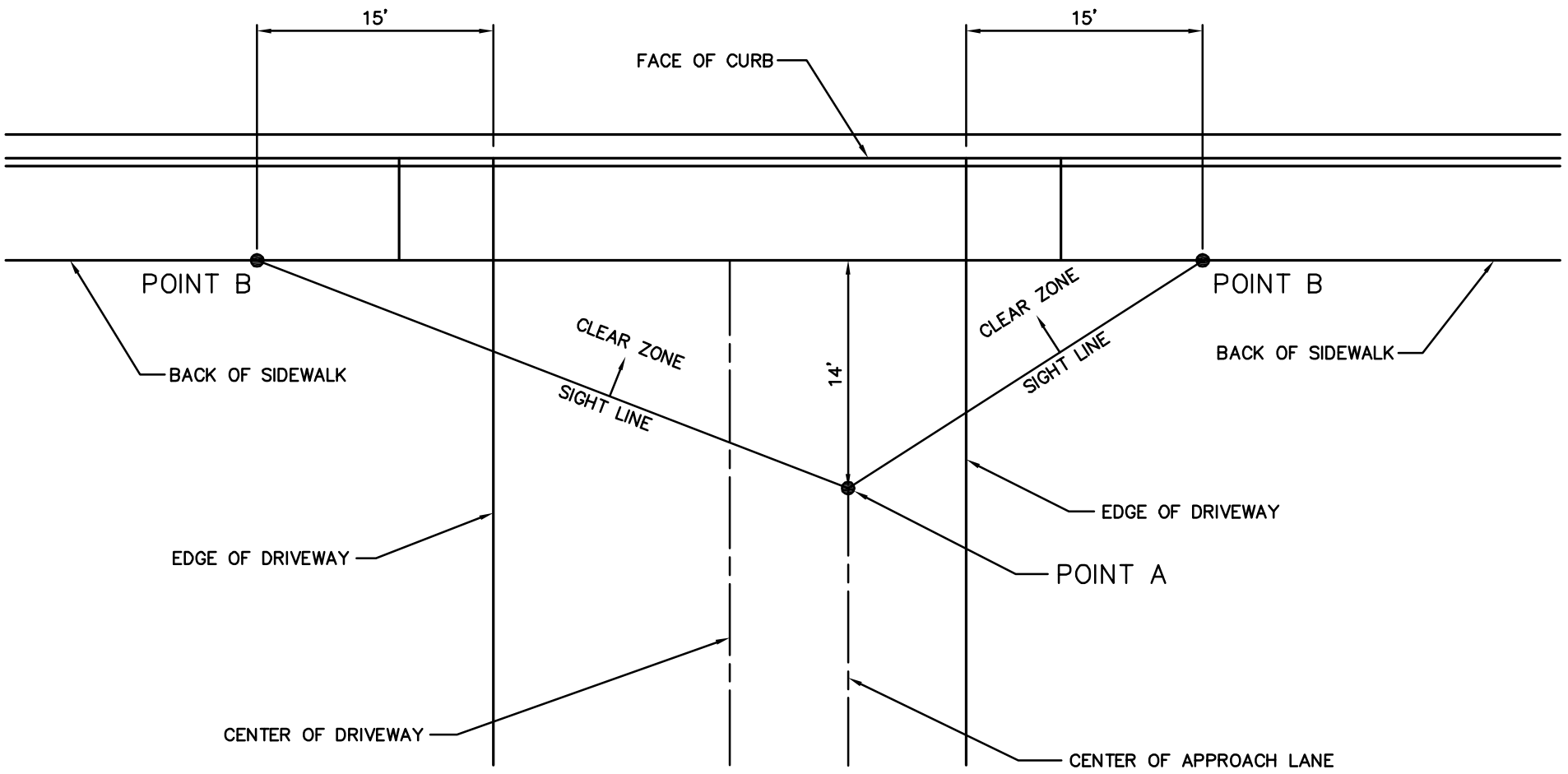
NOTES:

1. SEE DESIGN MANUAL STANDARD 21 (SIGHT DISTANCE – VEHICLES).
2. FOR UNCONTROLLED 4–WAY INTERSECTION SETBACK POINTS MEASURED FROM ROAD CENTERLINES.
3. FOR YIELD OR UNCONTROLLED "T" INTERSECTION SETBACK POINTS MEASURED FROM CENTER OF APPROACH LANE.
4. FOR USE ON 25 MPH STREETS. FOR STREETS WITH SPEED LIMITS GREATER THAN 25 MPH, SEE THE ENGINEER.

City of Bellevue

SIGHT DISTANCE – UNCONTROLLED AND YIELD INTERSECTIONS

DRAWING NUMBER	TE–2
SCALE	NONE
REVISION DATE	1/09
DEPARTMENT	TRANS



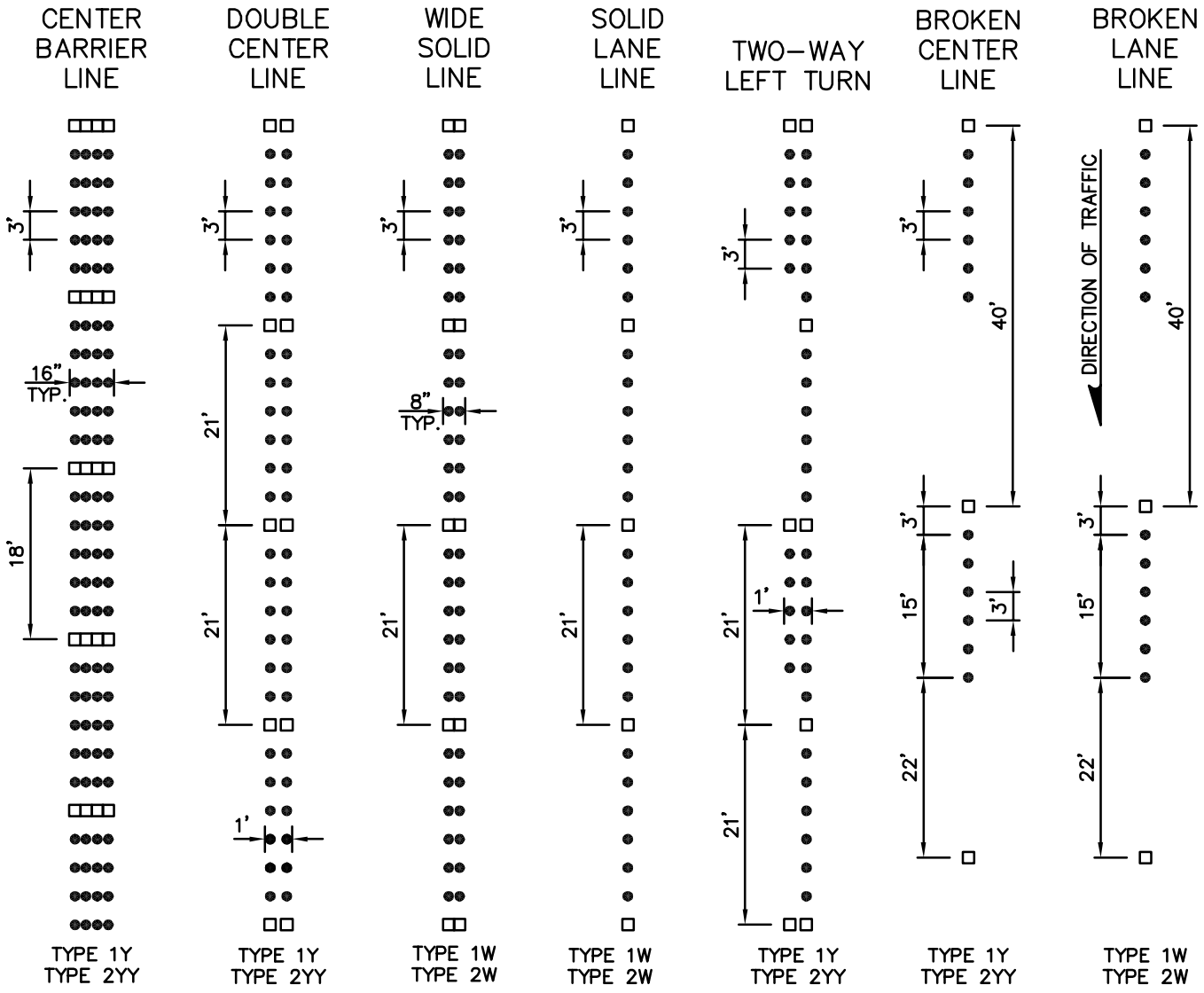
NOTES:

1. SEE DESIGN MANUAL STANDARD 22 (SIGHT DISTANCE – PEDESTRIANS).

City of Bellevue

PEDESTRIAN SIGHT LINES

DRAWING NUMBER	TE–3
SCALE	NONE
REVISION DATE	1/09
DEPARTMENT	TRANS



NOTES:

1. A SINGLE LINE OF TYPE 2 RAISED PAVEMENT MARKERS MAY BE APPROPRIATE FOR CENTER LINE ON LOWER VOLUME STREETS, AS APPROVED BY THE ENGINEER.
2. FOR RAISED PAVEMENT MARKER DETAIL, SEE DWG. TE–5.

● TYPE 1 RAISED PAVEMENT MARKER
□ TYPE 2 RAISED PAVEMENT MARKER

SEE DWG. TE–5

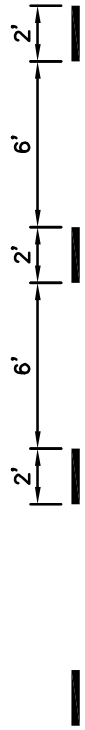
TYPE 2 RPM RAISED FACE COLORS	
TYPE 2YY	YELLOW AND YELLOW
TYPE 2W	WHITE–ONE SIDE ONLY
TYPE 2Y	YELLOW–ONE SIDE ONLY
TYPE 1 RPM COLORS	
TYPE 1W	WHITE
TYPE 1Y	YELLOW

City of Bellevue

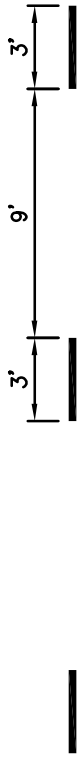
CHANNELIZATION LINES – A

DRAWING NUMBER	TE–4A
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS

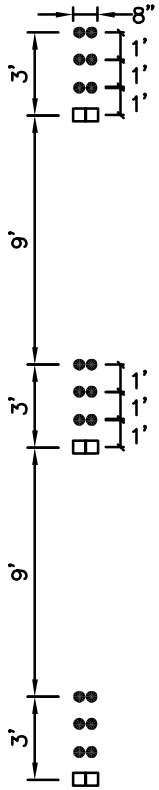
DASHED LINE
(THROUGH INTERSECTION)



DASHED LINE
(DROP LANE)



DASHED LINE – RPM'S
(DROP LANE)



TYPE 1W
TYPE 2W

NOTES:

1. MATERIAL SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER.
2. FOR RAISED PAVEMENT MARKER DETAIL, SEE DWG. TE–5.

● TYPE 1 RAISED PAVEMENT MARKER
□ TYPE 2 RAISED PAVEMENT MARKER

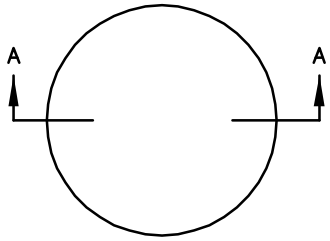
SEE DWG. TE–5

TYPE 2 RPM RAISED FACE COLORS	
TYPE 2YY	YELLOW AND YELLOW
TYPE 2W	WHITE–ONE SIDE ONLY
TYPE 2Y	YELLOW–ONE SIDE ONLY
TYPE 1 RPM COLORS	
TYPE 1W	WHITE
TYPE 1Y	YELLOW

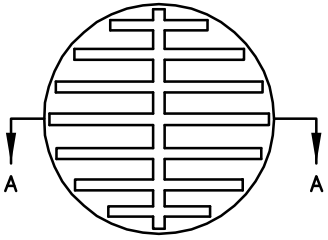
City of Bellevue

CHANNELIZATION LINES – B

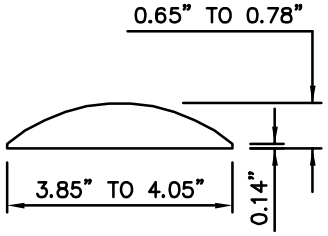
DRAWING NUMBER	TE–4B
SCALE	NONE
REVISION DATE	10/10
DEPARTMENT	TRANS



TOP VIEW



BOTTOM VIEW
(SEE NOTE 2)

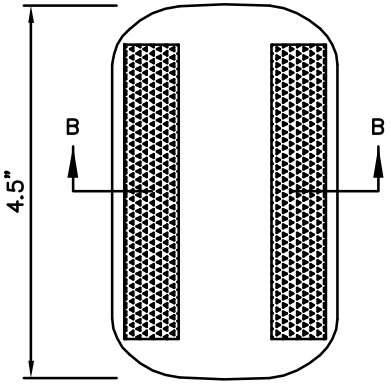


SECTION A–A

NOTES:

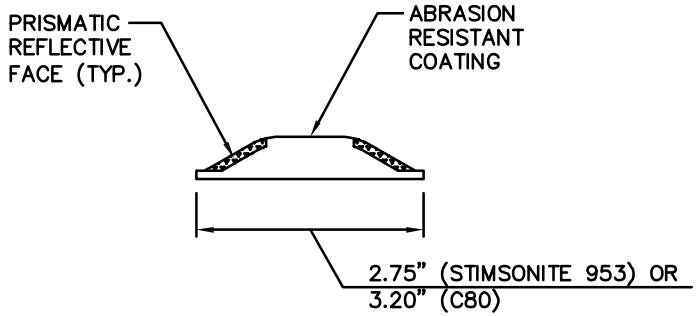
1. TYPE 1 MATERIAL– MARKER SHALL BE MOLDED OF A HIGH IMPACT, RECYCLED ACRYLONITRILE BUTADIENE STYRENE (ABS), CONFORMING TO ASTM SPEC DI 78888.
2. MARKER BOTTOM SHALL ALLOW UPWARD FLOW OF ADHESIVE AND VENTING TO PREVENT AIR ENTRAPMENT.

TYPE 1



PLAN

DIRECTION OF TRAFFIC



SECTION B–B

TYPE 2

NOTES:

1. RAISED PAVEMENT MARKERS TYPE 2 SHALL BE STIMSONITE 953 OR C80.
2. SUBSTITUTE PAVEMENT MARKERS SHALL NOT BE ACCEPTED WITHOUT WRITTEN APPROVAL BY THE ENGINEER, PRIOR TO THE INSTALLATION.

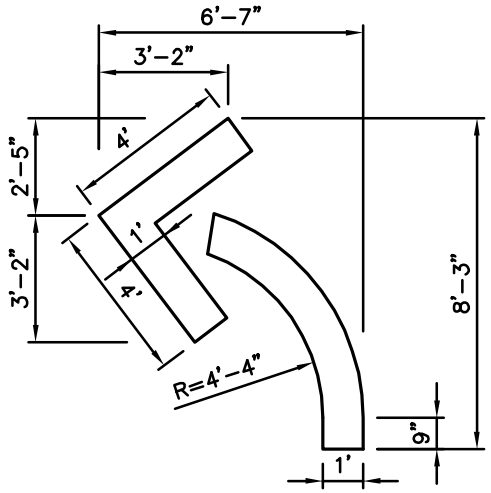
GENERAL NOTES:

1. ALL MARKERS INSTALLED ON CEMENT CONCRETE PAVEMENT SHALL BE INSTALLED WITH AN EAS–60 TWO PART EPOXY. SEE COB SPECIFICATION SECTION 8–09.
2. ALL MARKERS INSTALLED ON HMA PAVEMENTS SHALL BE INSTALLED WITH BITUMINOUS ADHESIVE, CRAFCO STANDARD PAVEMENT MARKER ADHESIVE. SEE COB SPECIFICATION SECTION 8–09.

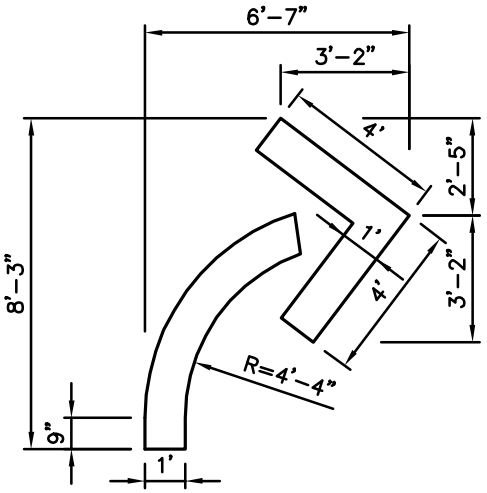
City of Bellevue

RAISED PAVEMENT MARKER DETAILS

DRAWING NUMBER	TE–5
SCALE	NONE
REVISION DATE	12/07
DEPARTMENT	TRANS



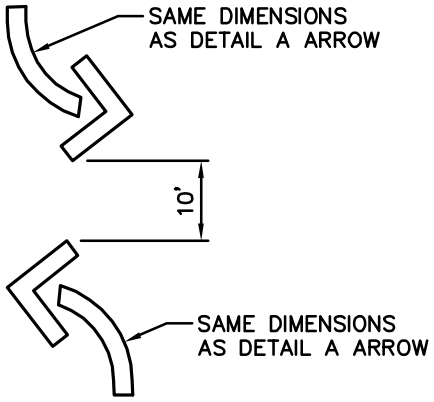
DETAIL A – LEFT



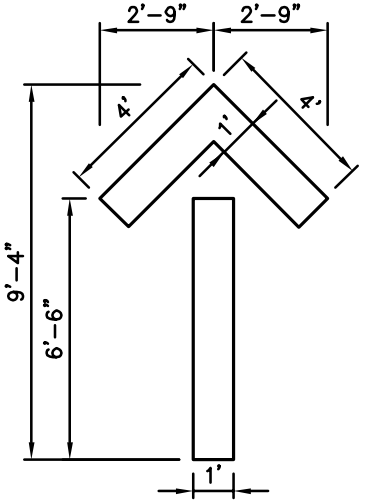
DETAIL B – RIGHT

NOTES:

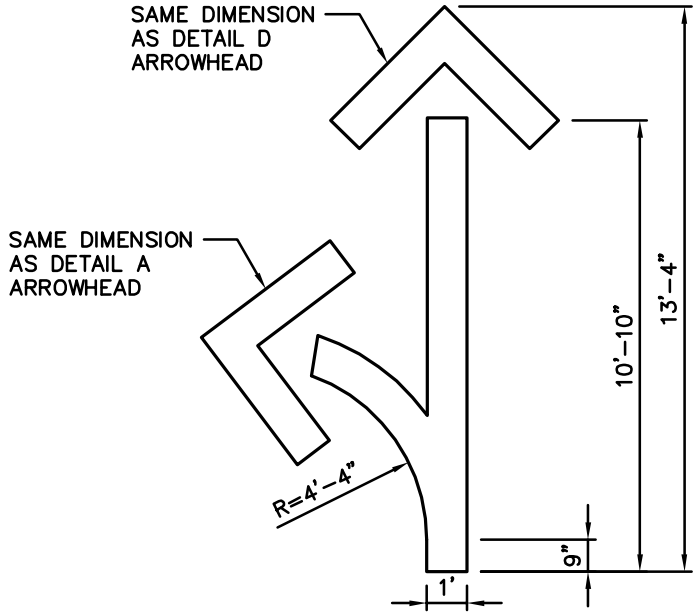
1. MATERIAL SHALL BE THERMOPLASTIC UNLESS OTHERWISE APPROVED BY THE ENGINEER.



DETAIL C – TWO WAY LEFT TURN



DETAIL D – STRAIGHT



DETAIL E – STRAIGHT/LEFT

City of Bellevue

PAVEMENT ARROW MARKINGS

DRAWING NUMBER	TE-6
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

DELETED

SUPERSEDED BY DRAWINGS TE-7A AND TE-7B

AS OF JANUARY 9, 2013

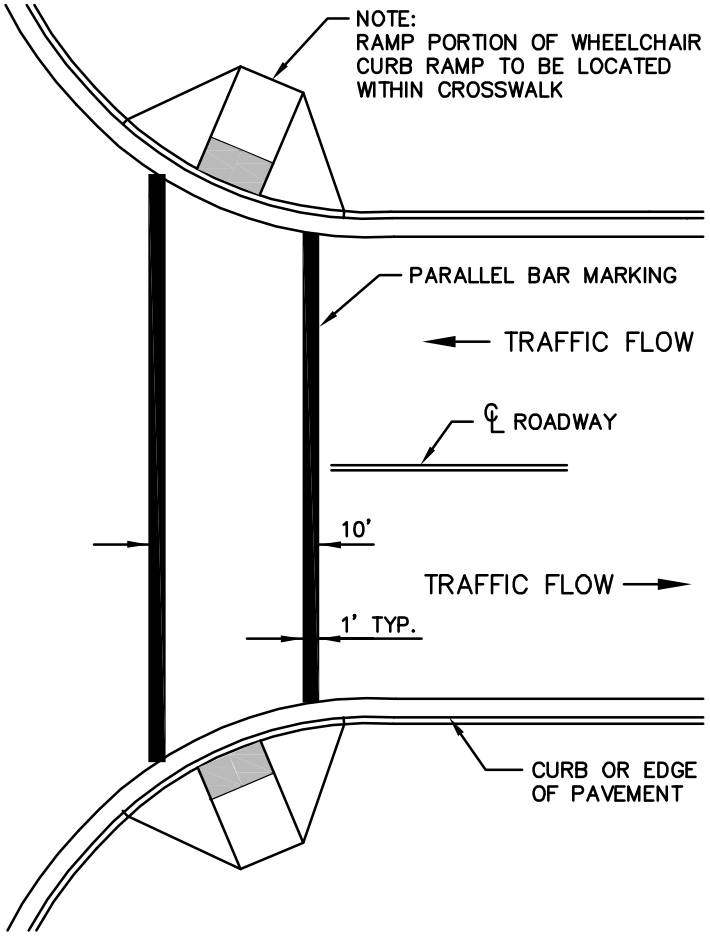
City of Bellevue

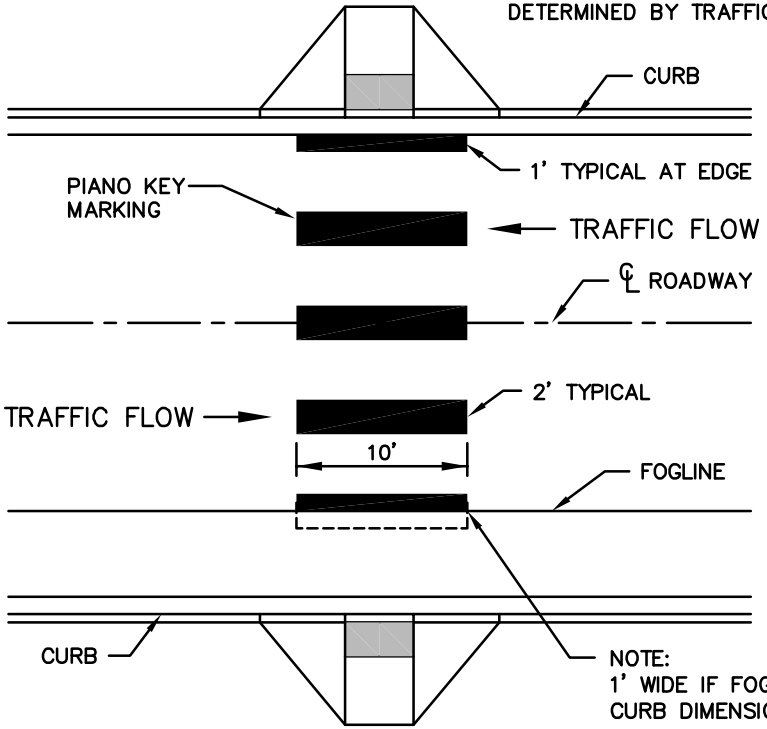
CROSSWALK MARKINGS

DRAWING NUMBER	TE-7
SCALE	NONE
REVISION DATE	01/13
DEPARTMENT	TRANS

NOTES:

1. MATERIAL SHALL BE THERMOPLASTIC, HOT APPLIED OR HEAT FUSED PREFORMED (90 MIL. MIN.), UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. GAP WIDTH SHALL BE 2' MINIMUM.
3. CROSSWALK MARKING STYLE TO BE DETERMINED BY TRAFFIC ENGINEERING.

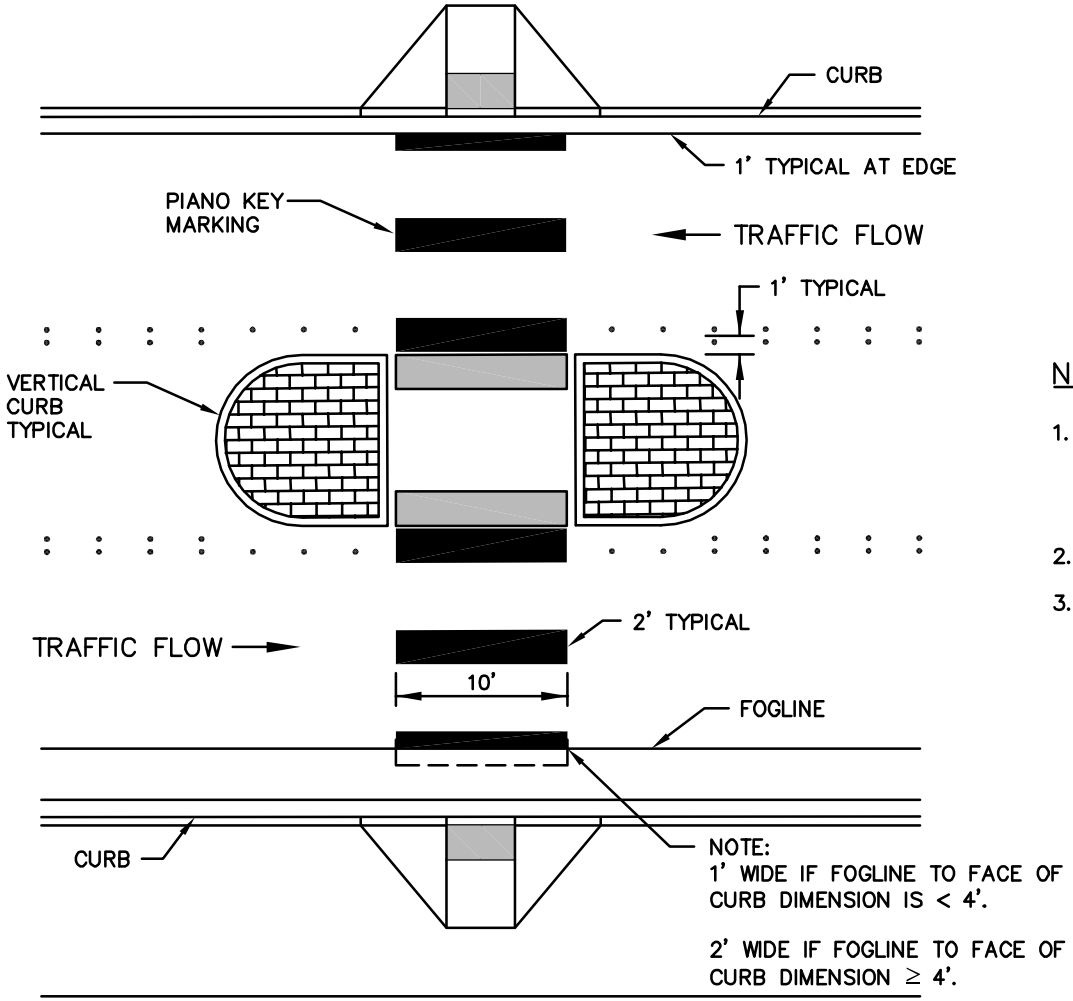




City of Bellevue

CROSSWALK MARKINGS

DRAWING NUMBER	TE-7A
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



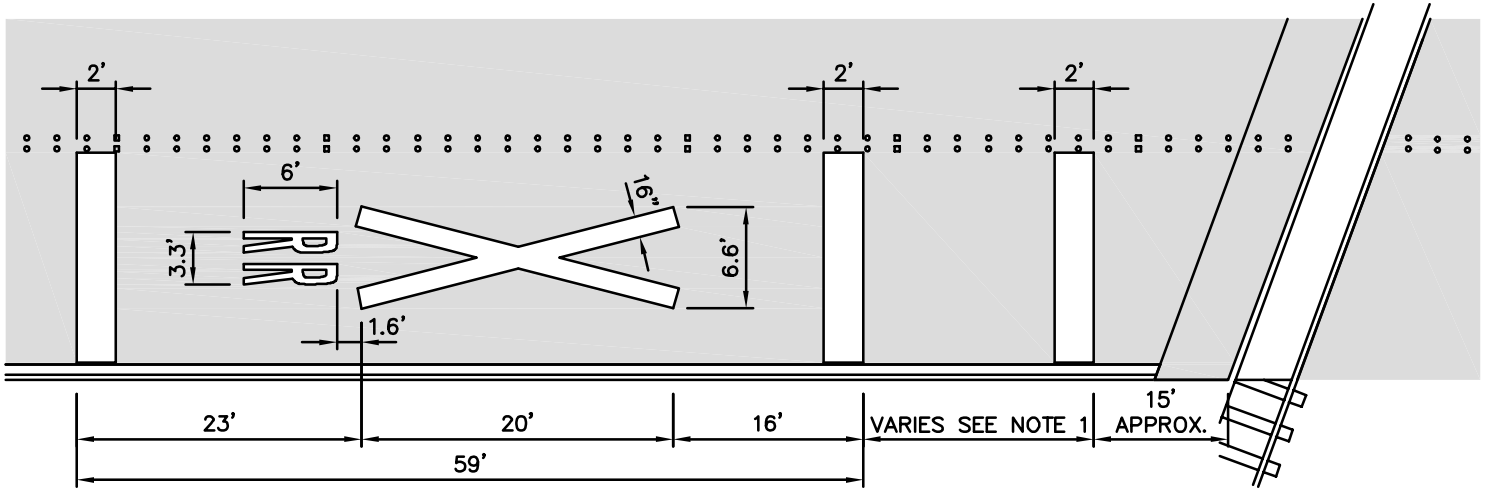
NOTES:

1. MATERIAL SHALL BE THERMOPLASTIC, HOT APPLIED OR HEAT FUSED PREFORMED (90 MIL. MIN.), UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. GAP WIDTH SHALL BE 2' MINIMUM.
3. IF THERE IS NO CURB AND GUTTER CONTACT TRAFFIC ENGINEER FOR LAYOUT.

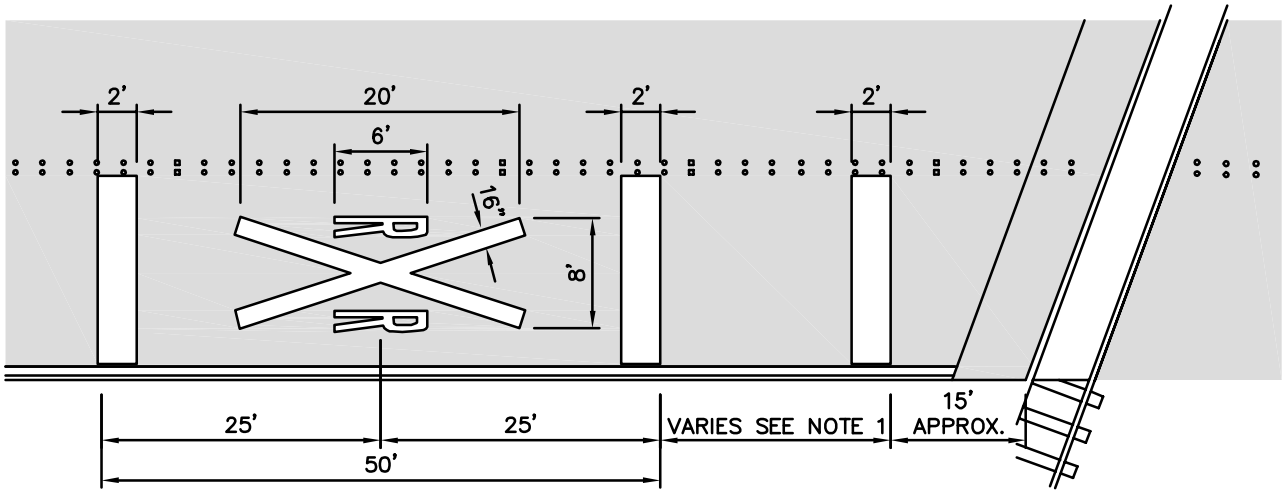
City of Bellevue

CROSSWALK MARKINGS

DRAWING NUMBER	TE-7B
SCALE	NONE
REVISION DATE	12/12
DEPARTMENT	TRANS



HIGHWAY–RAIL GRADE CROSSING
PAVEMENT MARKINGS



ALTERNATE "WIDE"
PAVEMENT MARKINGS

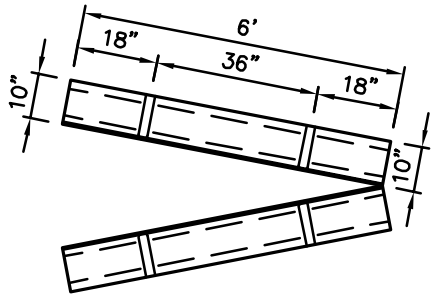
NOTES:

1. FOR DISTANCE, SEE CHAPTER 2C, TABLE 2C–4 OF THE LATEST REVISION OF THE MUTCD.
2. MATERIAL SHALL BE THERMOPLASTIC UNLESS OTHERWISE APPROVED BY THE ENGINEER.
3. USE ALTERNATE "WIDE" MARKINGS ONLY WHEN APPROVED BY THE ENGINEER.

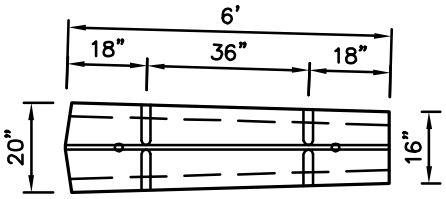
City of Bellevue

HIGHWAY – RAIL GRADE CROSSING PAVEMENT MARKINGS

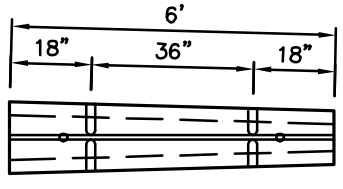
DRAWING NUMBER	TE–8
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS



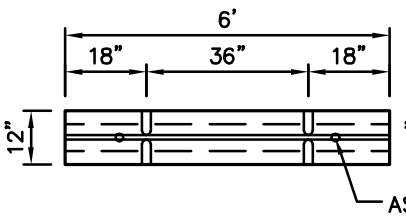
TYPE A CURB
STRAIGHT SECTION



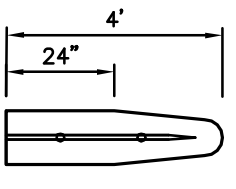
TYPE A CONNECTING
DIVIDER NO. 2



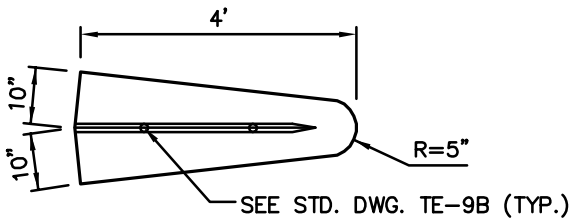
TYPE A CONNECTING
DIVIDER NO. 1



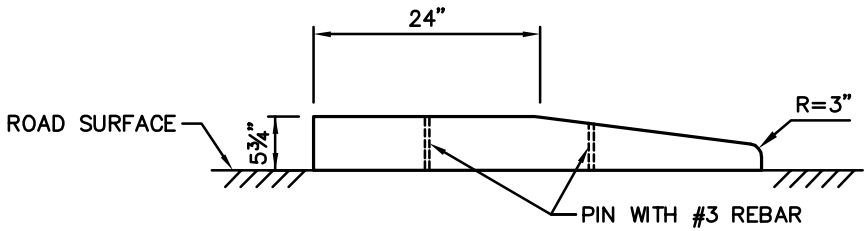
TYPE C CURB



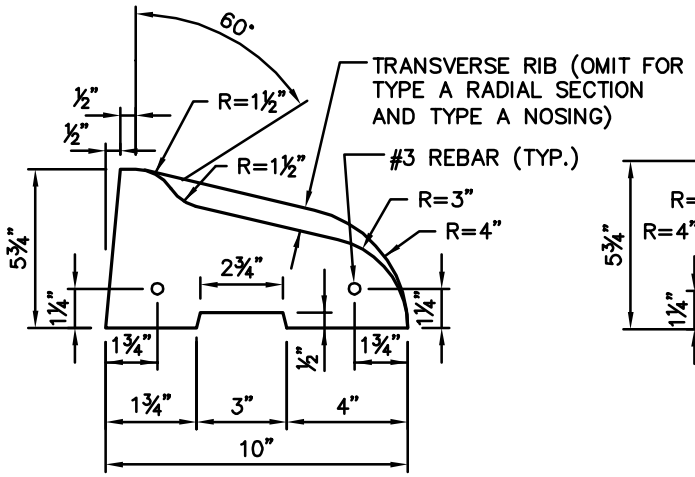
TYPE C NOSING



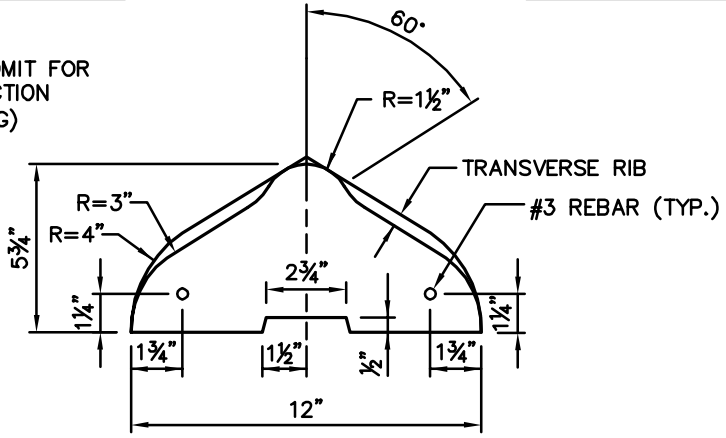
TYPE A NOSING



ELEVATION – TYPE A NOSING AND C NOSING



SECTION – TYPE A CURB



SECTION – TYPE C CURB

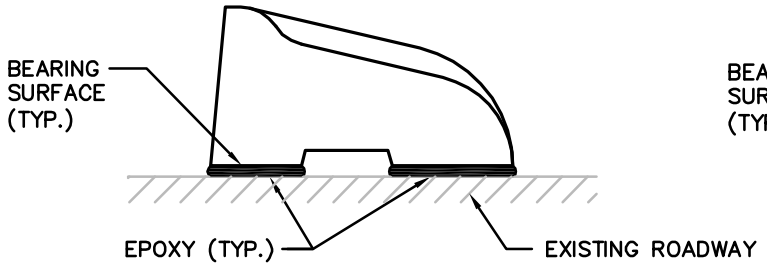
NOTES:

1. ONLY 6' SECTIONS OF TYPE C AND TYPE A CURB SHALL BE USED ON ALL INSTALLATIONS, EXCEPT FOR NOTE 2.
2. THE USE OF 1' BLOCK SECTIONS OF TYPE C AND TYPE A CURB SHALL ONLY BE USED TO FORM SMALL RADIUS CURVES OR ADJUSTMENTS IN FINAL LENGTH, AS APPROVED BY THE ENGINEER.
3. ALL PRECAST TRAFFIC CURBS SHALL BE SECURED USING WSDOT APPROVED 2 PART EPOXY RESIN.
4. PRECAST CURB NOSINGS AND NEXT TWO SECTIONS OF CURB SHALL BE BOTH PINNED AND EPOXIED TO THE ROAD SURFACE. SEE STD. DWG. TE-9B.

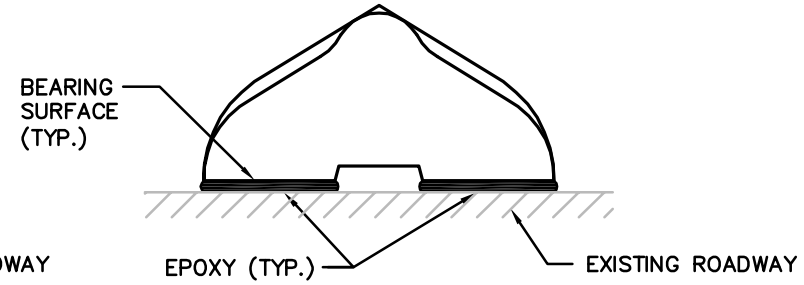
City of Bellevue

PRECAST TRAFFIC CURBS

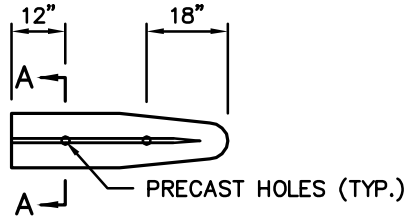
DRAWING NUMBER	TE-9A
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



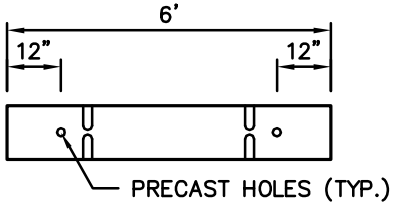
SECTION – TYPE A CURB



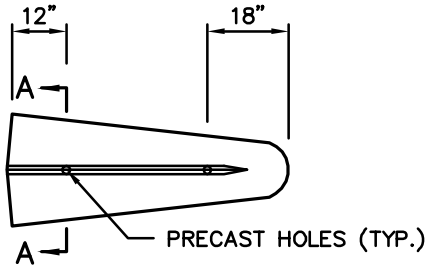
SECTION – TYPE C CURB



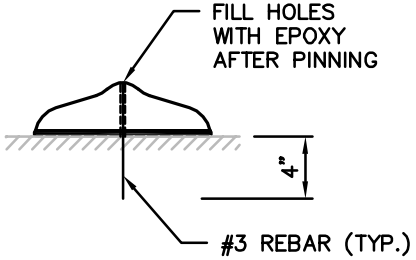
TYPE C NOSING



TYPE C OR TYPE A CONNECTING DIVIDER



TYPE A NOSING



SECTION A–A

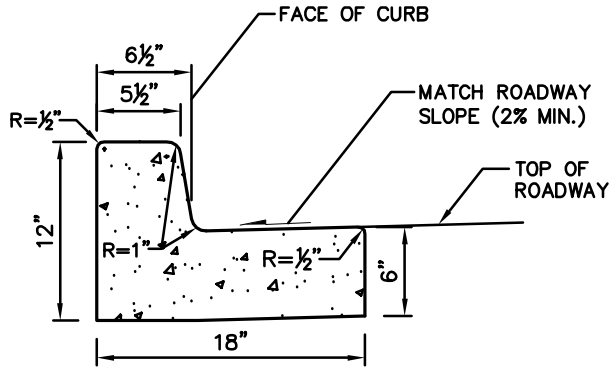
NOTES:

1. NOSING AND NEXT TWO SECTIONS OF CURB SHALL HAVE HOLES PRECAST AS SHOWN.
2. PRECAST TRAFFIC CURB SHALL BE INSTALLED WITH AN EAS–60 TWO PART EPOXY. SEE COB SPECIFICATION SECTION 8–09.
3. EPOXY SHALL BE PLACED UNDER THE BEARING SURFACE OF THE PRECAST TRAFFIC CURB.
4. APPLY SUFFICIENT EPOXY TO ENSURE SQUEEZE–OUT OF 50% PER EACH SIDE OF EACH CURB SECTION.

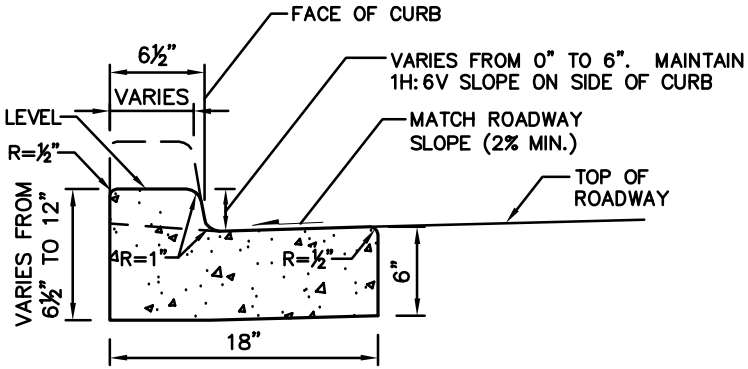
City of Bellevue

PRECAST TRAFFIC CURB INSTALLATION

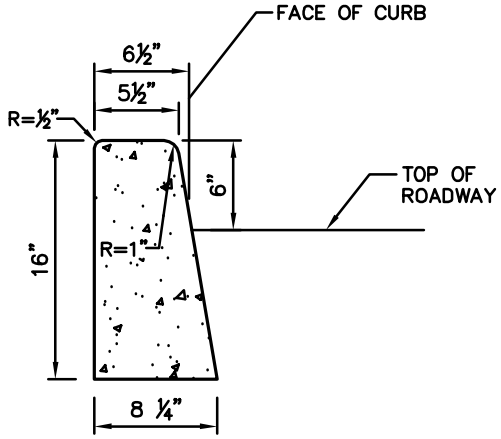
DRAWING NUMBER	TE–9B
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



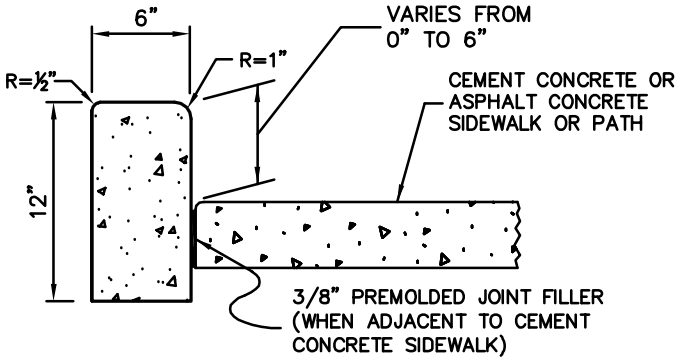
CEMENT CONCRETE
TRAFFIC CURB AND GUTTER



DEPRESSED CURB SECTION



CEMENT CONCRETE TRAFFIC
CURB



CEMENT CONCRETE
PEDESTRIAN CURB

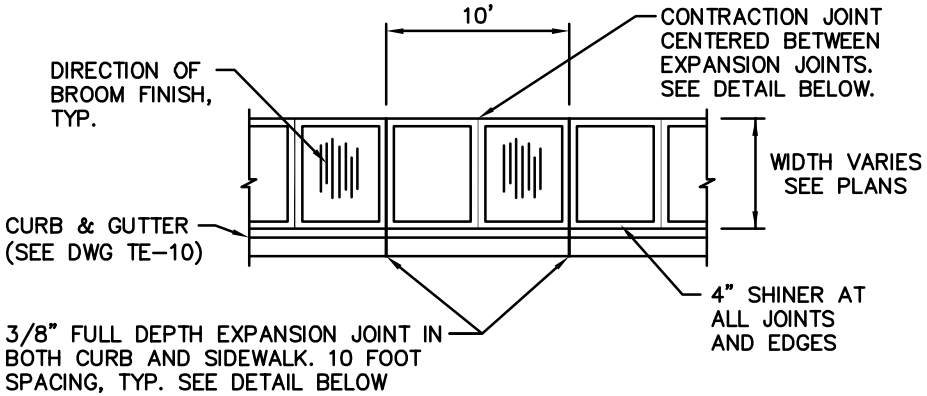
NOTES:

1. ALL CEMENT CONCRETE CURBS SHALL BE CONSTRUCTED WITH AIR ENTRAINED CONCRETE CLASS 3000 CONFORMING TO WSDOT STD. SPEC. 6-02 EXCEPT AS SPECIFIED IN NOTE 2.
2. CEMENT CONCRETE CURB OR CURB AND GUTTER ALONG THE FULL WIDTH OF A DRIVEWAY ENTRANCE SHALL BE CONSTRUCTED WITH AIR ENTRAINED CONCRETE CLASS 4000 CONFORMING TO WSDOT STD. SPEC. 6-02.
3. REMOVAL/REPLACEMENT OF CEMENT CONCRETE CURB SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

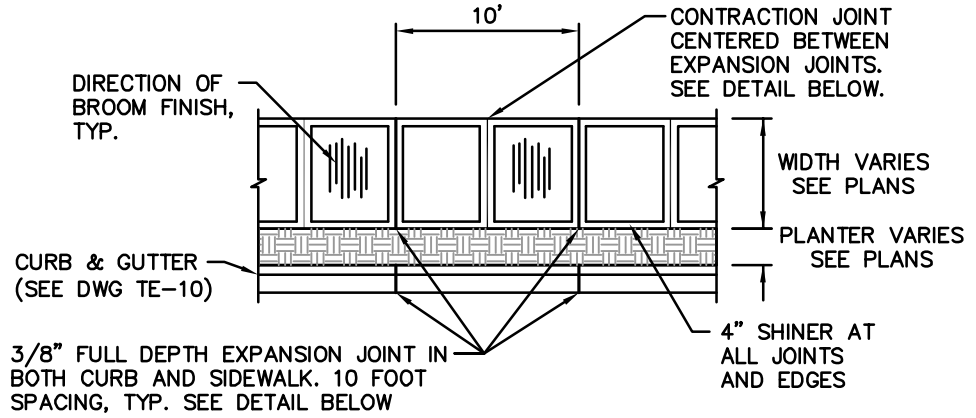
City of Bellevue

CEMENT CONCRETE CURBS

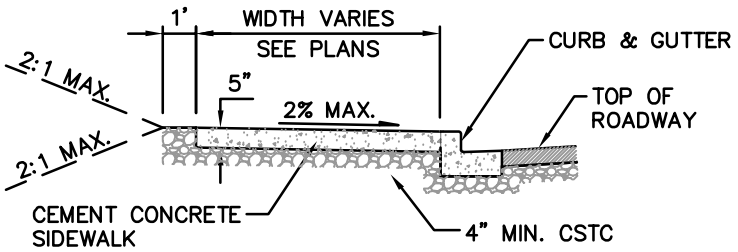
DRAWING NUMBER	TE-10
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



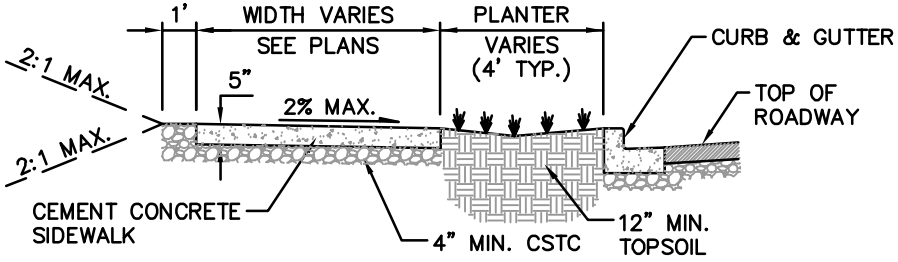
PLAN – CURBSIDE SIDEWALK



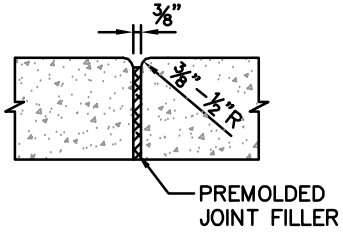
PLAN – SIDEWALK WITH PLANTER STRIP



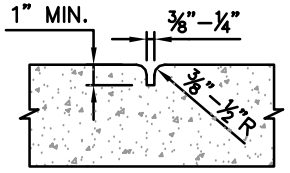
SECTION – CURBSIDE SIDEWALK



SECTION – SIDEWALK WITH PLANTER STRIP



FULL DEPTH EXPANSION JOINT DETAIL



CONTRACTION JOINT DETAIL

NOTES:

1. CONCRETE SHALL BE AIR ENTRAINED CLASS 3000 PER SECTION 6-02 OF WSDOT STANDARD SPECIFICATIONS.
2. FINISH: LIGHT FINISH WITH A STIFF BROOM PERPENDICULAR TO CURB. FOR GRADES OVER 4%, FINISH WITH A STIPPLE BRUSH.
3. REMOVAL/REPLACEMENT OF CEMENT CONCRETE CURB SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. LIDS FOR JUNCTION BOXES AND UTILITY VAULTS SHALL BE NON-SKID AS SPECIFIED BY THE ENGINEER.

City of Bellevue

SIDEWALK

DRAWING NUMBER	TE-11
SCALE	NONE
REVISION DATE	12/12
DEPARTMENT	TRANS

DELETED

SUPERSEDED BY DRAWINGS TE-12A, TE-12B, TE-12C, AND TE-12D

AS OF FEBRUARY 12, 2014

City of Bellevue

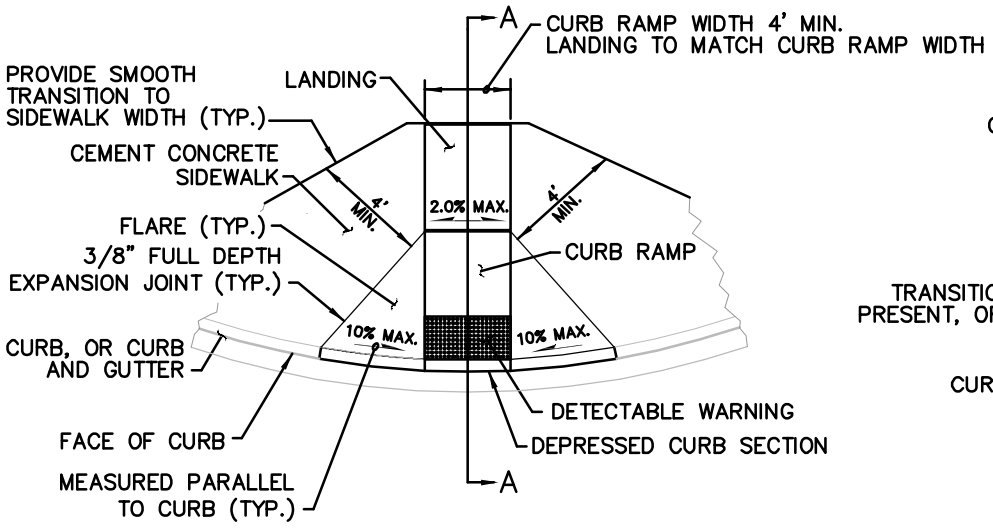
CURB RAMP TYPE 1

DRAWING NUMBER	TE-12
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

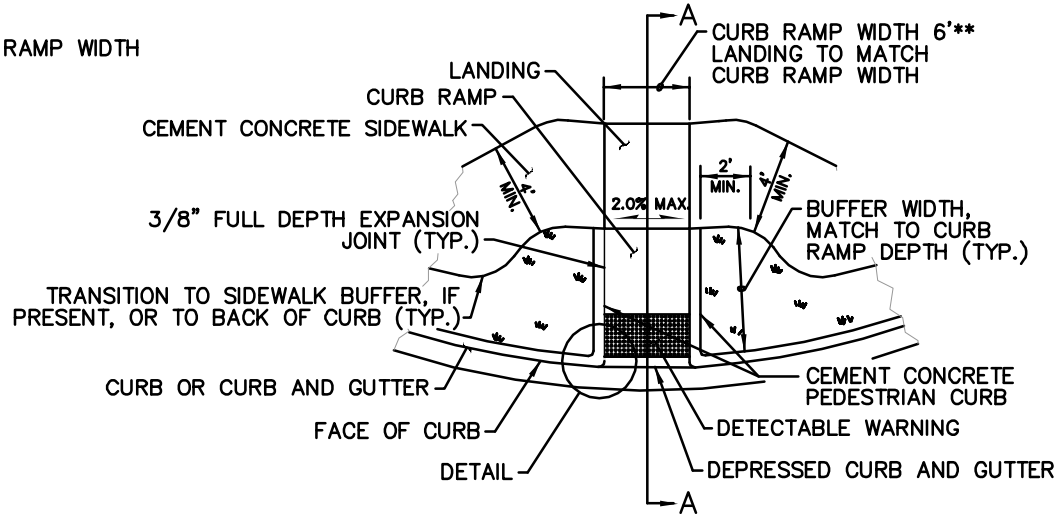
CURB RAMP NOTES FOR STANDARD DRAWINGS TE-12B, TE-12C, AND TE-12D:

1. TYPICALLY A SEPARATE CURB RAMP WILL BE PROVIDED FOR EACH MARKED OR UNMARKED CROSSWALK. CURB RAMP LOCATION SHALL BE PLACED WITHIN THE WIDTH OF THE ASSOCIATED CROSSWALK OR AS SHOWN IN THE CONTRACT PLANS WHEN NO MARKED CROSSWALK IS PRESENT. IF ONLY ONE RAMP IS TO BE PROVIDED, PRIOR APPROVAL BY THE ENGINEER SHALL BE OBTAINED.
2. RAMPS SHALL BE CONSTRUCTED PARALLEL TO THEIR RESPECTIVE CROSSWALK MARKINGS OR DIRECTION OF TRAVEL.
3. SEE THE CONTRACT PLANS FOR THE CURB DESIGN TYPE AND WIDTH.
4. A MINIMUM 4'x4' FLAT LANDING, WITH 2% MAXIMUM SLOPE IN ALL DIRECTIONS, SHALL BE PROVIDED AT THE TOP AND BOTTOM OF ALL RAMPS (4'x5' IF CONSTRAINED ON TWO OR MORE SIDES). AREA IN THE ROADWAY WITHIN CROSSWALK MARKINGS MAY BE USED AS LANDING.
5. MAXIMUM SLOPES ARE INCLUSIVE OF ALL CONSTRUCTION TOLERANCES.
6. WSDOT STANDARD PLAN F-45.10-01 SHALL BE USED FOR DETECTABLE WARNING PLACEMENT. FOR NEW CONCRETE CONSTRUCTION, MATERIAL SHALL BE "CAST-IN-PLACE" BY ARMOR-TILE, ADA SOLUTIONS, OR ALERTTILE APPLIED INTEGRAL TO THE CONCRETE POURING OF THE RAMP. FOR RETROFIT CONCRETE APPLICATIONS, MATERIAL SHALL BE "SURFACE APPLIED" BY ARMOR-TILE, ADA SOLUTIONS, OR ALERTTILE. FOR ASPHALT APPLICATIONS, "TOPMARK" BY FLINT TRADING MAY BE USED OR CONSULT THE ENGINEER FOR ALLOWABLE OPTIONS. NO SUBSTITUTIONS PERMITTED WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER. DETECTABLE WARNINGS SHALL BE FEDERAL YELLOW. INSTALLATION SHALL CONFORM TO MANUFACTURER'S SPECIFICATIONS.
7. SEE STD. DWG. TE-10 FOR CEMENT CONCRETE TRAFFIC CURB AND GUTTER, DEPRESSED CURB SECTION, CEMENT CONCRETE TRAFFIC CURB, AND CEMENT CONCRETE PEDESTRIAN CURB DETAILS.
8. PEDESTRIAN CURB MAY BE OMITTED IF THE GROUND SURFACE AT THE BACK OF THE CURB RAMP AND/OR LANDING WILL BE THE SAME ELEVATION AS THE CURB RAMP OR LANDING AND THERE WILL BE NO MATERIAL TO RETAIN.
9. SEE STD. DWG. TE-11 FOR SIDEWALK DETAILS.
10. CURB RAMP, LANDING, AND FLARE SURFACES SHALL BE BROOM FINISHED PER STD. DWG. TE-11.
11. CEMENT CONCRETE FOR RAMPS SHALL BE AIR ENTRAINED CONCRETE CLASS 3000, CONFORMING TO WSDOT STD. SPEC. 6-02.
12. REMOVAL/REPLACEMENT OF CEMENT CONCRETE CURB AND SIDEWALK SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
13. GRADE BREAKS FOR RAMPS SHALL BE PERPENDICULAR TO DIRECTION OF TRAVEL.
14. AT GRADE BREAKS, THE ENTIRE LENGTH OF THE GRADE BREAK BETWEEN THE TWO ADJACENT SURFACE PLANES SHALL BE FLUSH.
15. GRATINGS, JUNCTION BOXES, ACCESS COVERS, OR OTHER APPURTENANCES SHALL NOT BE PLACED IN FRONT OF THE CURB RAMP OR ON ANY PART OF THE CURB RAMP OR LANDING, UNLESS APPROVED IN ADVANCE BY THE ENGINEER.
16. RAMPS AND WINGS SHALL PROVIDE AND MAINTAIN POSITIVE DRAINAGE TOWARDS THE ROADWAY.

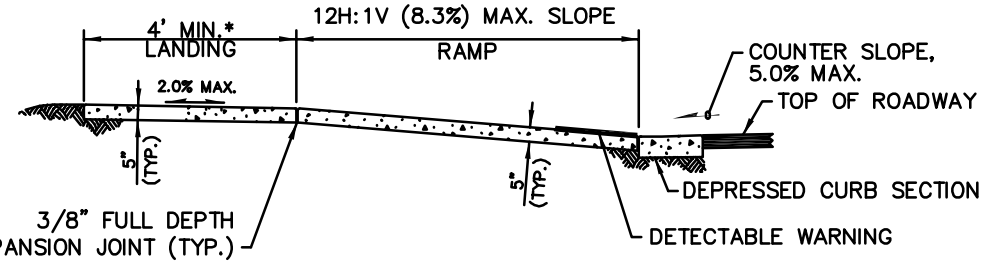
City of Bellevue	CURB RAMP CONSTRUCTION NOTES	DRAWING NUMBER	TE-12A
		SCALE	NONE
		REVISION DATE	01/14
		DEPARTMENT	TRANS



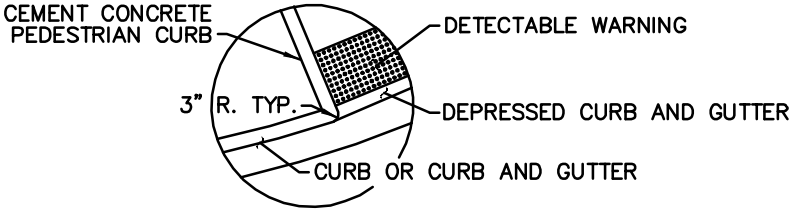
CURB RAMP TYPE 1A



CURB RAMP TYPE 1B



SECTION A–A



DETAIL

LEGEND

SLOPE IN EITHER DIRECTION

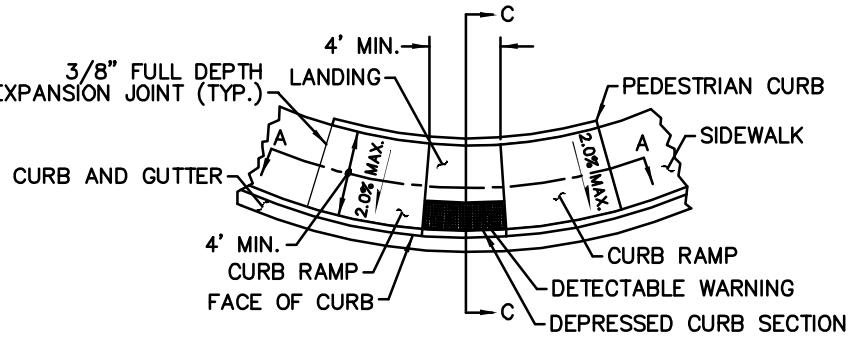
PAY LIMIT (CITY–FUNDED PROJECTS)

NOTE: SEE TE–12A FOR CURB RAMP CONSTRUCTION NOTES.
* 5' IF CONSTRAINED AT BACK OF LANDING (WALL, FENCE, RAILING, ETC).
** MAY BE REDUCED TO A MINIMUM WIDTH OF 4' WITH PRIOR APPROVAL FROM THE ENGINEER.

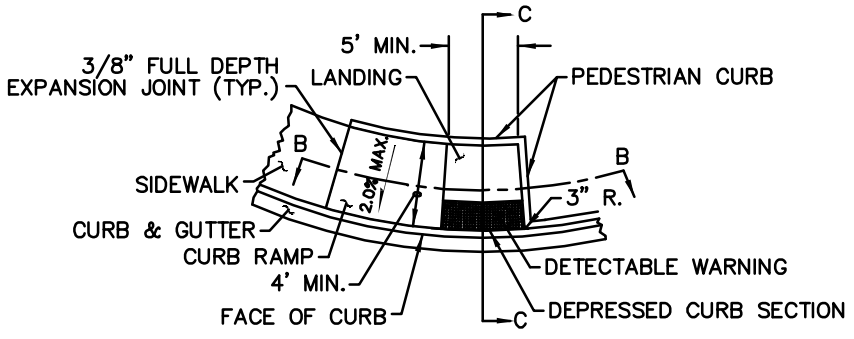
City of Bellevue

CEMENT CONCRETE CURB RAMP TYPE 1

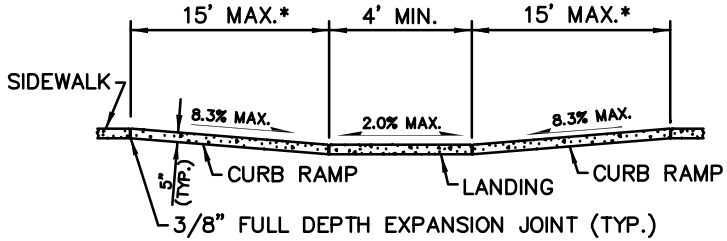
DRAWING NUMBER	TE–12B
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



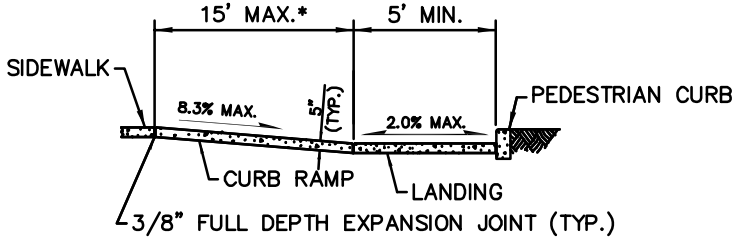
CURB RAMP TYPE 2A



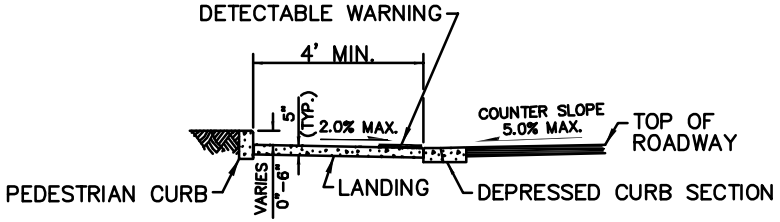
CURB RAMP TYPE 2B



SECTION A–A



SECTION B–B



SECTION C–C

*RUNNING SLOPE OF THE CURB RAMP SHALL BE 8.3% MAXIMUM BUT SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15FT AS MEASURED RADIALLY AT BACK OF RAMP.

LEGEND

SLOPE IN EITHER DIRECTION

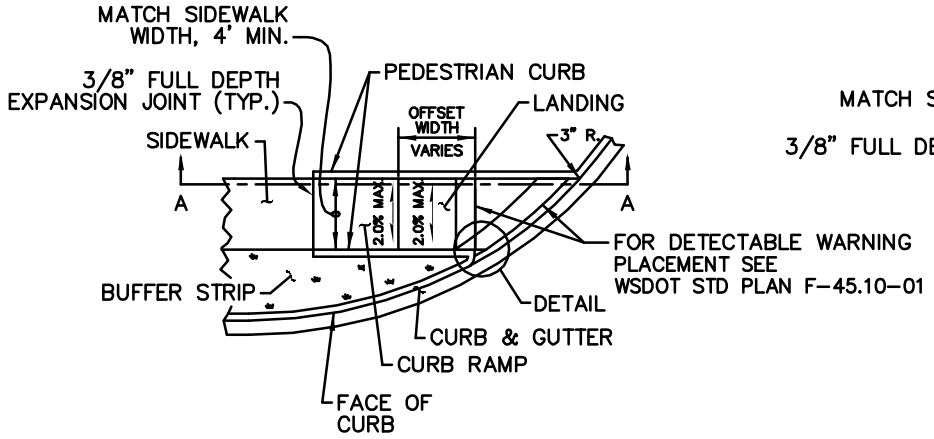
PAY LIMIT (CITY–FUNDED PROJECTS)

NOTE: SEE TE–12A FOR CURB RAMP CONSTRUCTION NOTES

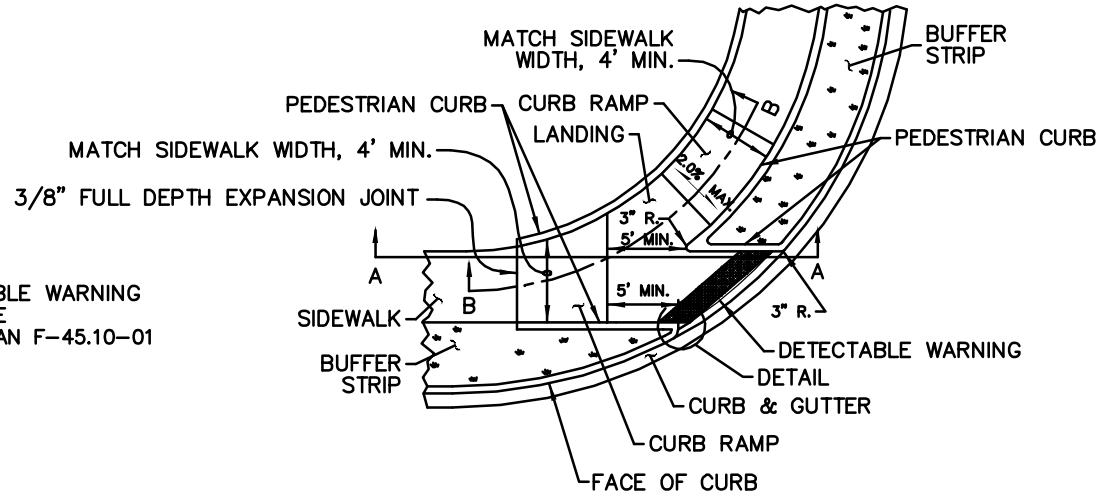
City of Bellevue

CEMENT CONCRETE CURB RAMP TYPE 2

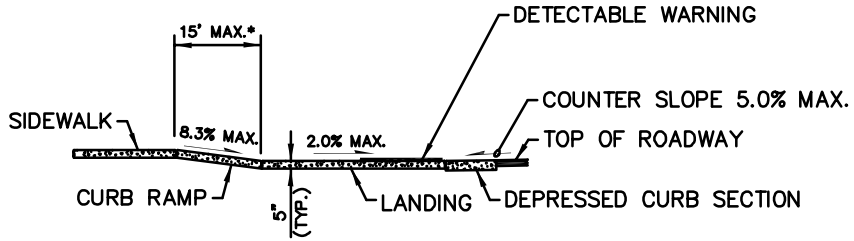
DRAWING NUMBER	TE–12C
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



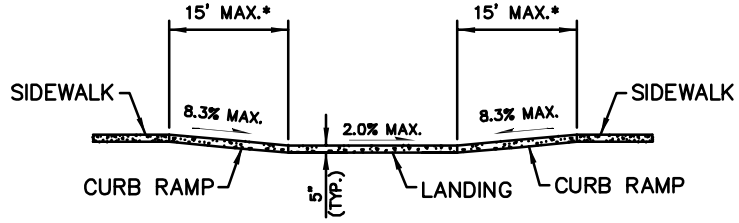
CURB RAMP TYPE 3A



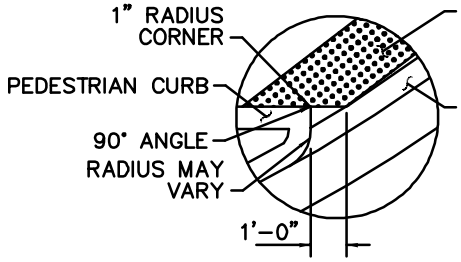
CURB RAMP TYPE 3B



SECTION A-A



SECTION B-B



DETAIL

*RUNNING SLOPE OF THE CURB RAMP SHALL BE 8.3% MAXIMUM BUT SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15FT AS MEASURED RADIALLY AT BACK OF RAMP.

NOTE: SEE TE-12A FOR CURB RAMP CONSTRUCTION NOTES

LEGEND

SLOPE IN EITHER DIRECTION

PAY LIMIT (CITY-FUNDED PROJECTS)

City of Bellevue

CEMENT CONCRETE CURB RAMP TYPE 3

DRAWING NUMBER	TE-12D
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

DELETED

SUPERSEDED BY DRAWINGS TE-12A, TE-12B, TE-12C, AND TE-12D

AS OF FEBRUARY 12, 2014

City of Bellevue

CURB RAMP TYPE 2

DRAWING NUMBER	TE-13
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

0 TO 40 MPH

L	$\frac{WT}{120} \times S_{SL}^2$	(SYMMETRICAL ABOUT CENTERLINE)
	$\frac{WT}{60} \times S_{SL}^2$	(OFFSET)

45 MPH OR MORE

L	$\frac{WT}{2} \times S_{SL}^2$	(SYMMETRICAL ABOUT CENTERLINE)
	$WT \times S_{SL}^2$	(OFFSET)

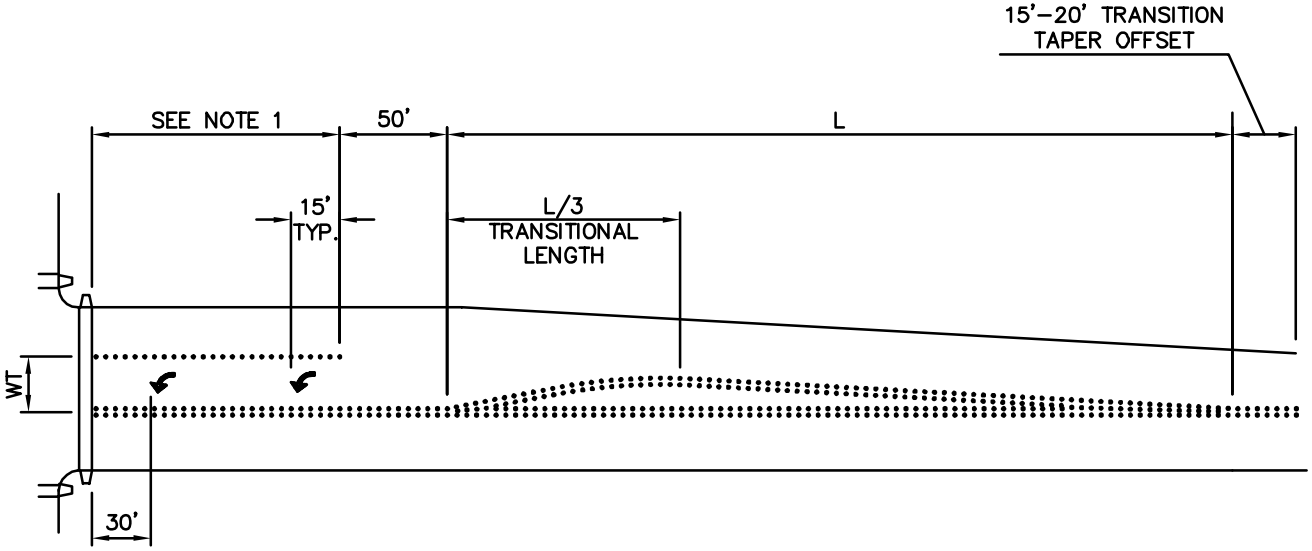
WT = WIDTH OF TURN LANE

S_{SL} = POSTED SPEED LIMIT

L = LENGTH OF CHANNELIZATION

NOTES:

1. SEE ENGINEER FOR POCKET LENGTH AND FOR LAYOUT AND PLACEMENT OF TURN ARROWS.



City of Bellevue

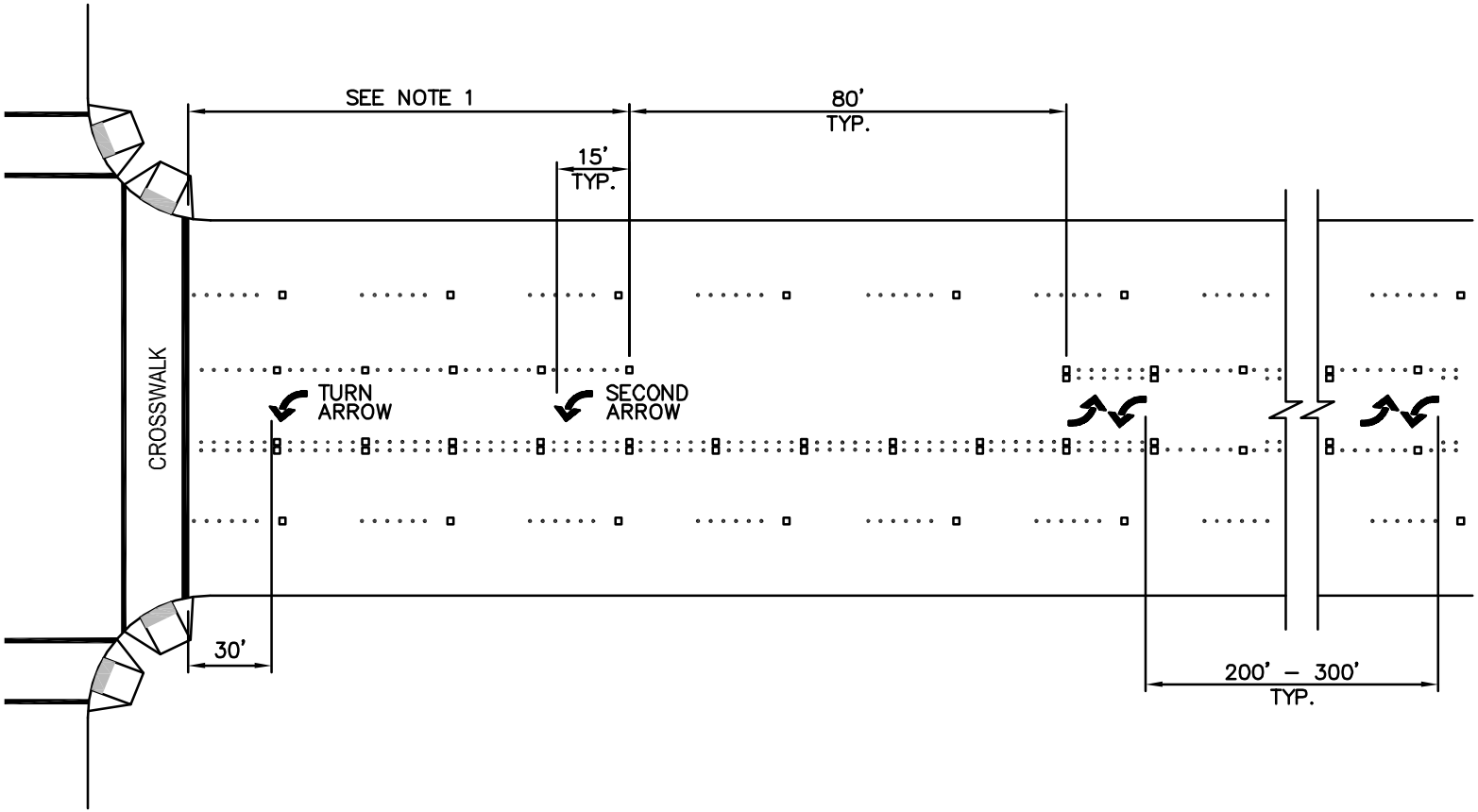
NONCONTINUOUS LEFT TURN LANE

DRAWING NUMBER	TE–14
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

NOTES:

1. SEE ENGINEER FOR POCKET LENGTH AND FOR LAYOUT AND PLACEMENT OF TURN ARROWS.

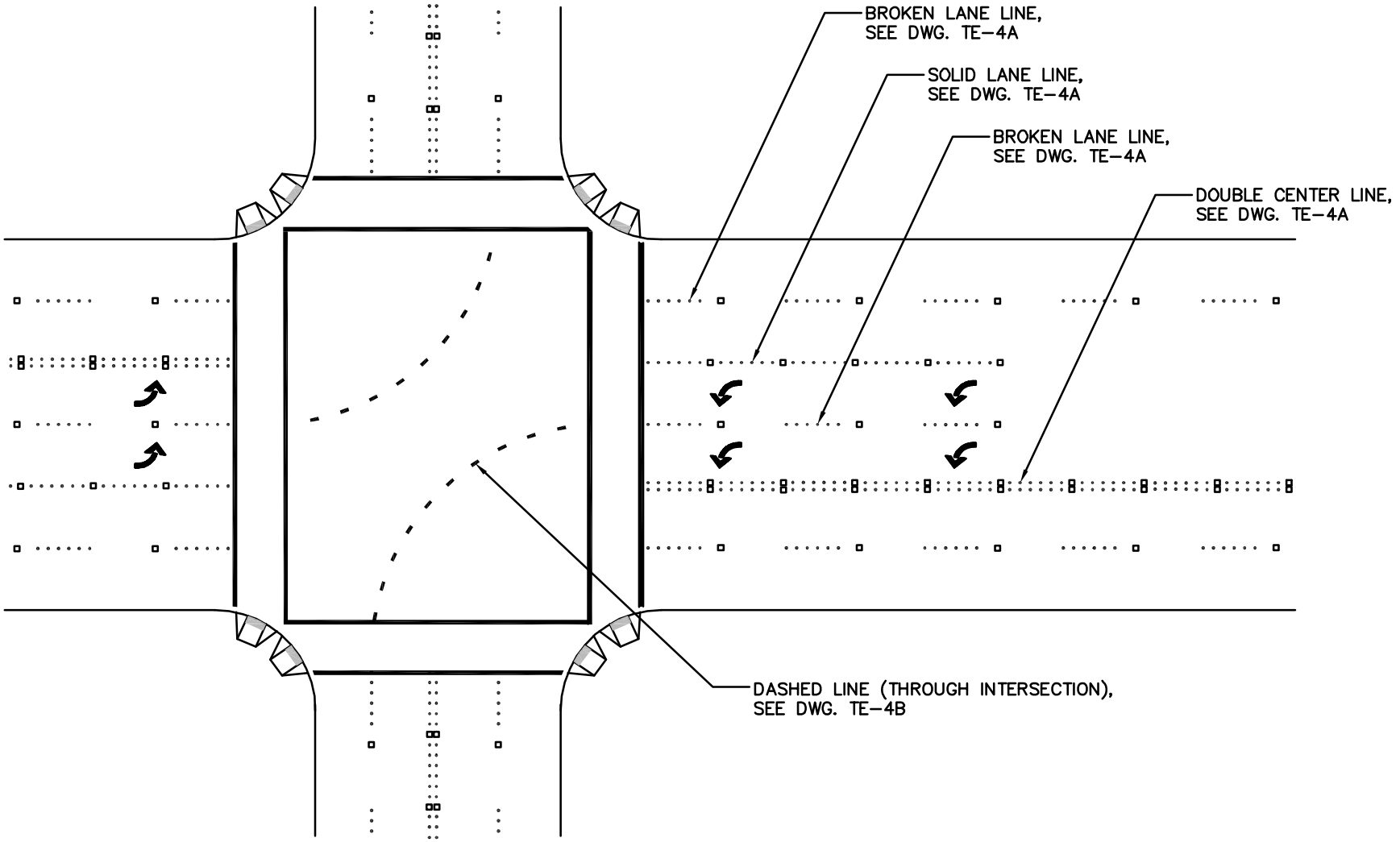
2 DIMENSIONS SHOWN MAY BE MODIFIED TO ACCOMMODATE DRIVEWAYS.



City of Bellevue

LEFT TURN AND TWO WAY LEFT TURN LANE

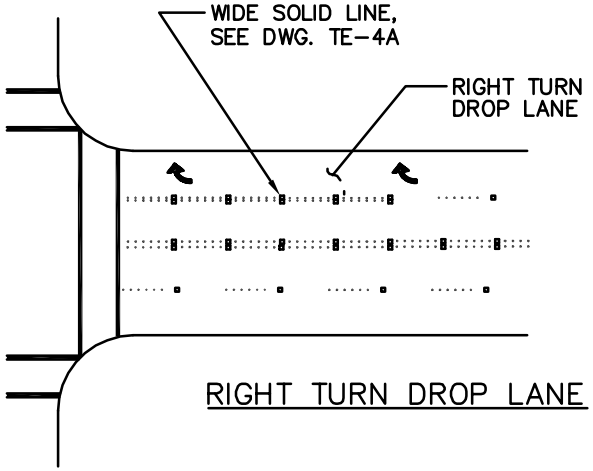
DRAWING NUMBER	TE–15A
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



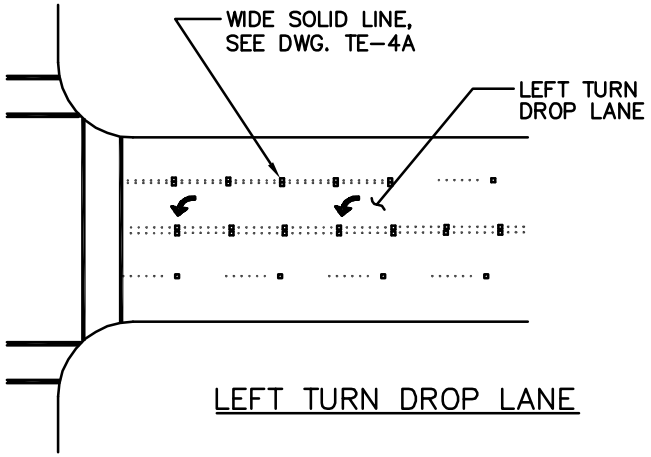
City of Bellevue

DUAL LEFT TURN AT INTERSECTION

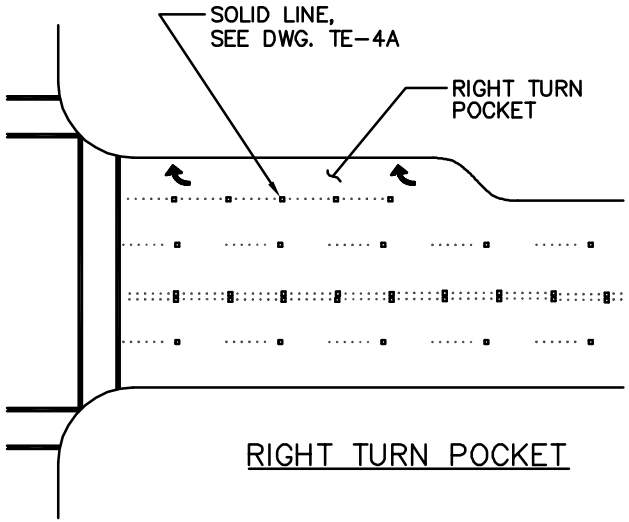
DRAWING NUMBER	TE-15B
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



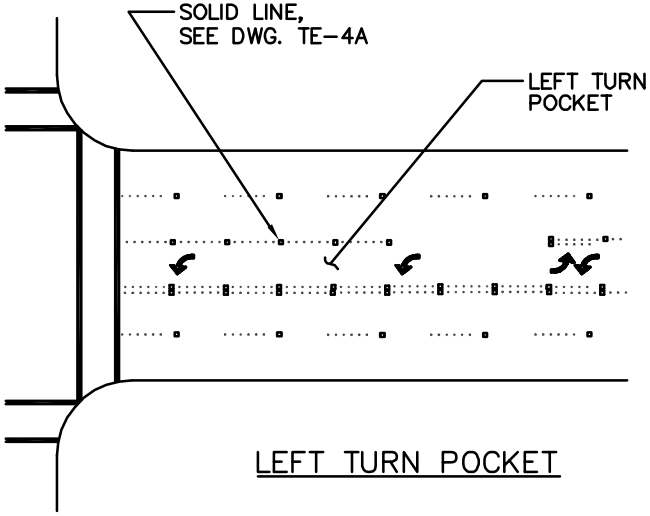
RIGHT TURN DROP LANE



LEFT TURN DROP LANE



RIGHT TURN POCKET



LEFT TURN POCKET

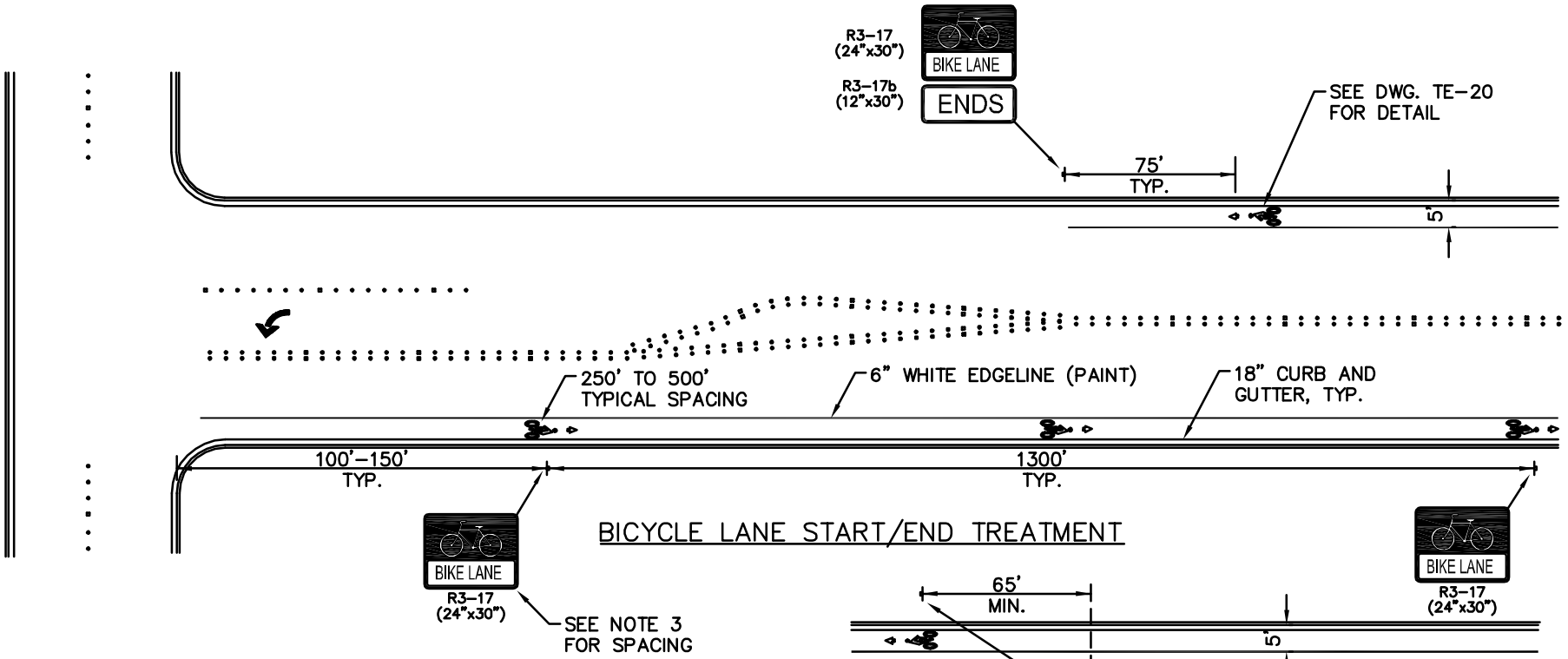
NOTES:

1. RIGHT AND LEFT TURN DROP LANES SHOULD ALSO BE SUPPLEMENTED WITH R3-7 (GROUND MOUNT) AND/OR R3-5 (OVERHEAD MOUNT) MANDATORY MOVEMENT LANE CONTROL SIGNS.

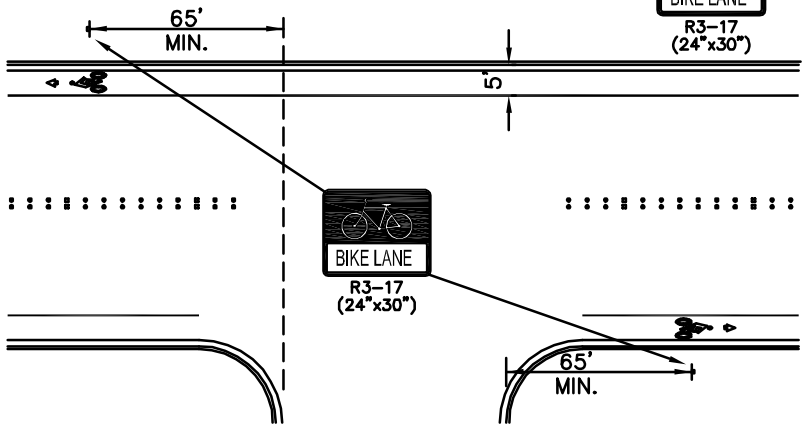
City of Bellevue

DROP LANES AND POCKETS

DRAWING NUMBER	TE-16
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS



BICYCLE LANE START/END TREATMENT



SIDE STREET TREATMENT

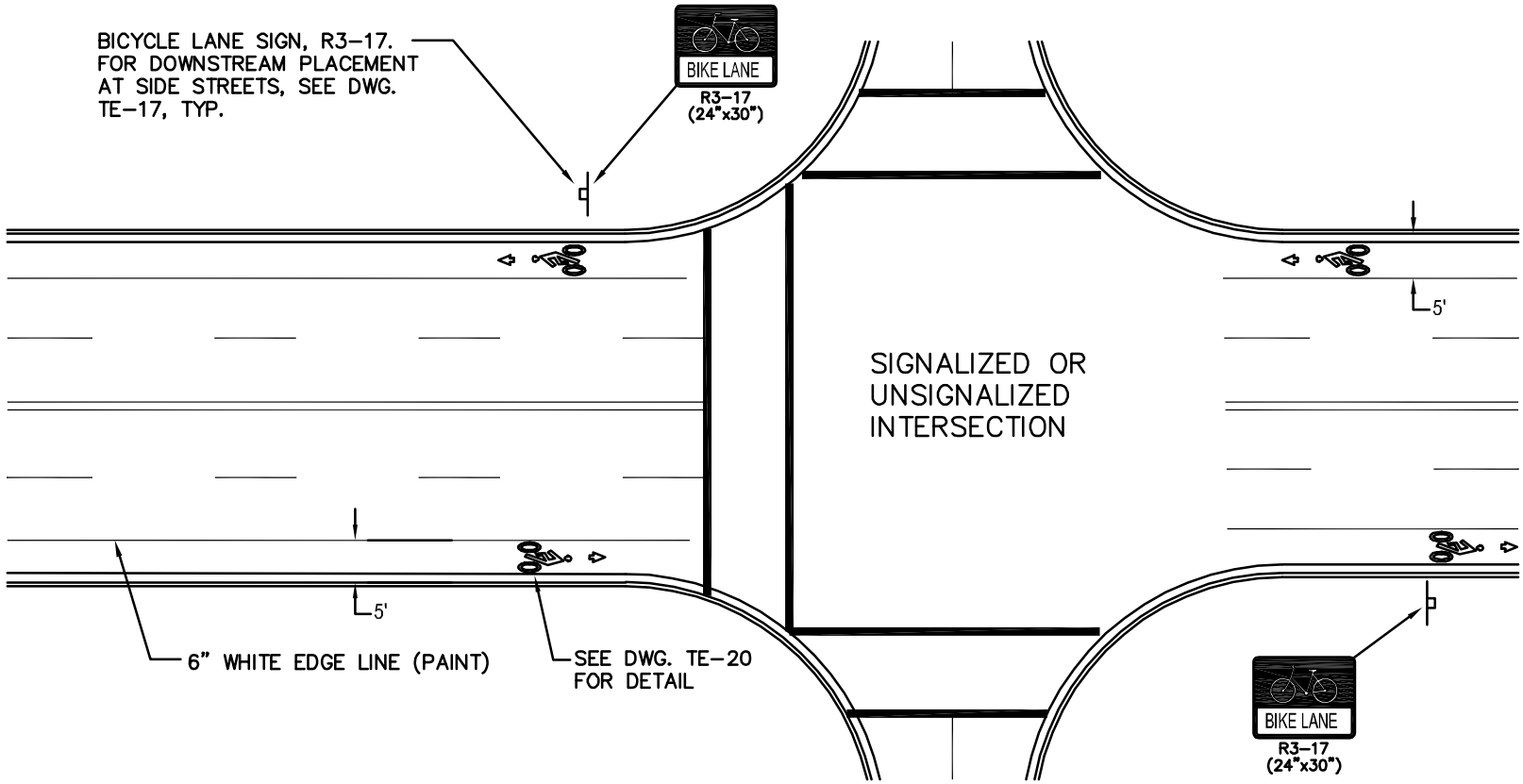
NOTES:

1. BIKE LANE WIDTH IS 5 FEET.
2. WHEN SIGN R3-17 IS USED, PAVEMENT MARKING SHALL BE INSTALLED ADJACENT TO R3-17.
3. R3-17 SIGN SHOULD BE SPACED EVERY 1300' (TYP.), AND DOWNSTREAM OF PUBLIC SIDE STREETS. FOR BIKE LANE PAVEMENT MARKING DETAIL, SEE DWG. TE-20.

City of Bellevue

BICYCLE LANE CHANNELIZATION

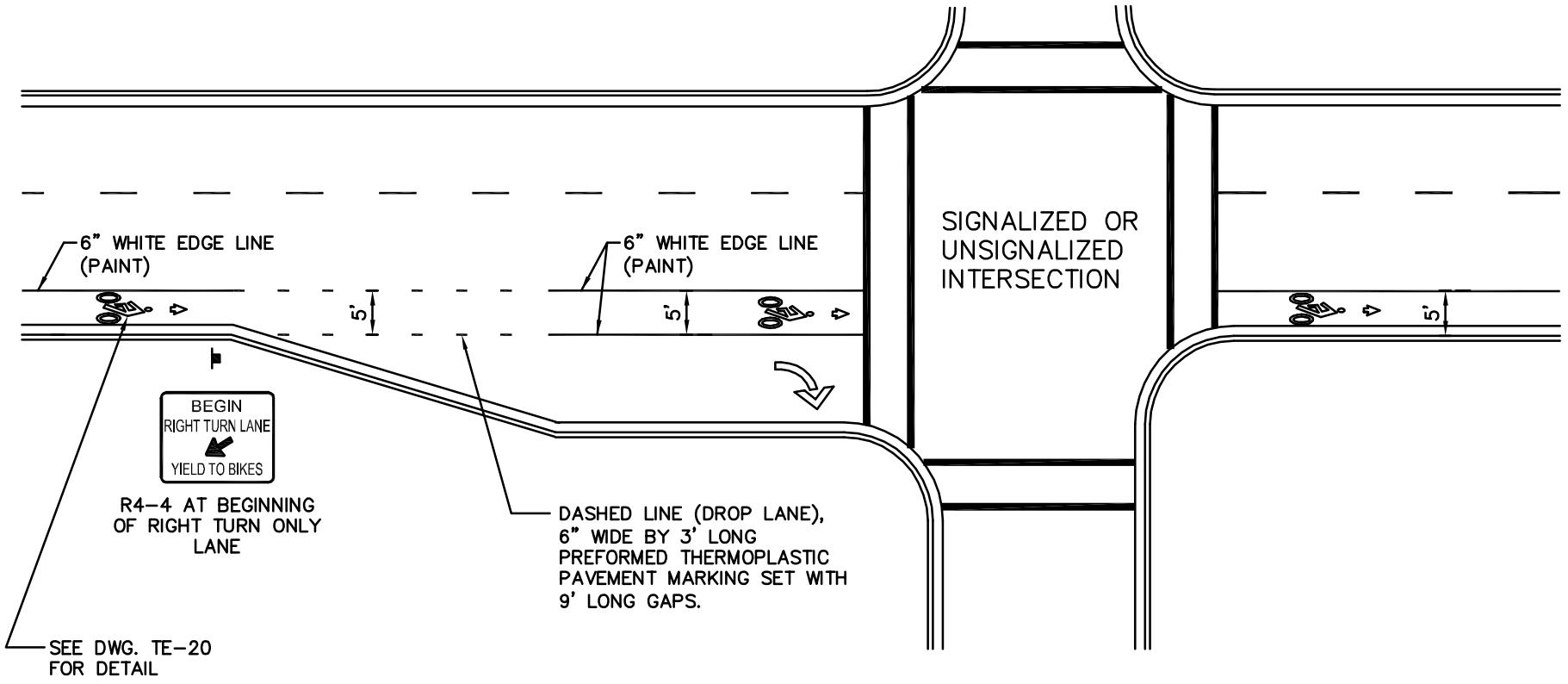
DRAWING NUMBER	TE-17
SCALE	NONE
REVISION DATE	3/11
DEPARTMENT	TRANS



City of Bellevue

BICYCLE LANES AT INTERSECTIONS

DRAWING NUMBER	TE-18
SCALE	NONE
REVISION DATE	12/07
DEPARTMENT	TRANS



City of Bellevue

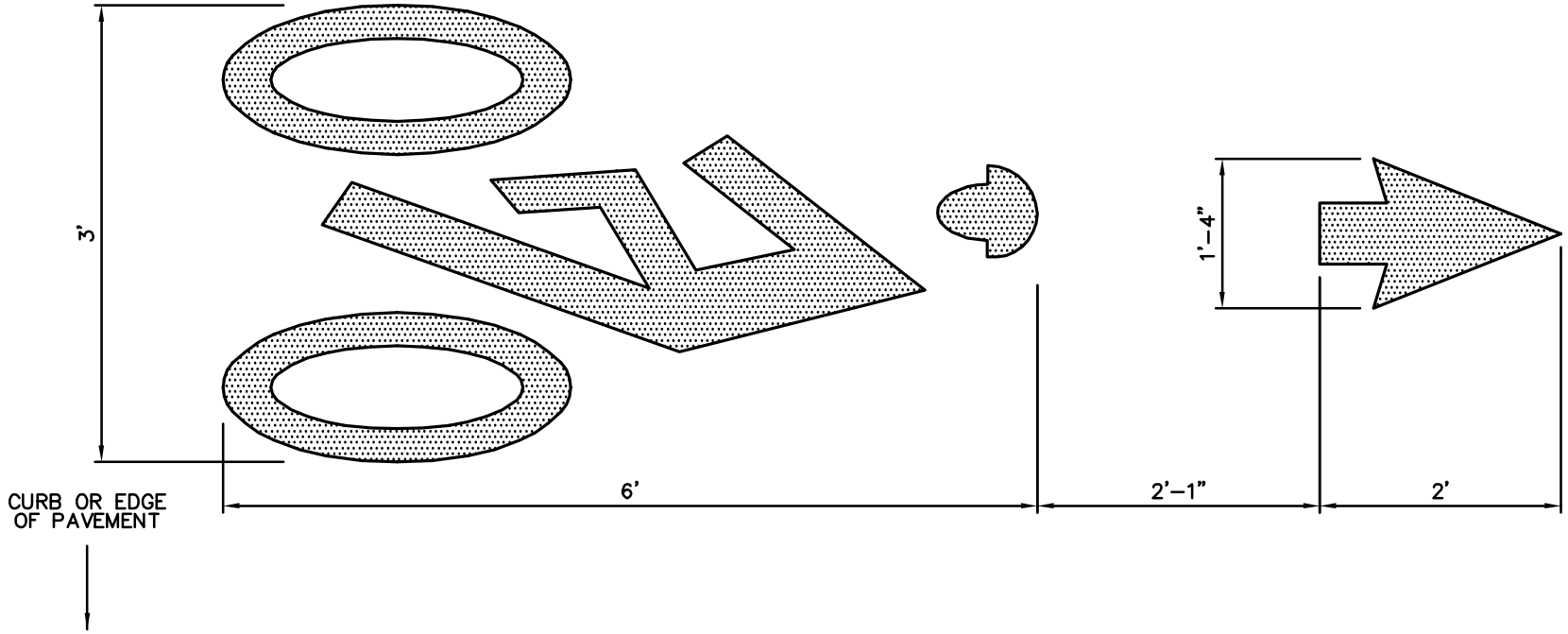
BIKE LANE TREATMENT AT RIGHT TURN POCKET

DRAWING NUMBER	TE-19
SCALE	NONE
REVISION DATE	10/08
DEPARTMENT	TRANS

NOTES:

1. BICYCLE LANE MATERIAL SHALL BE LOW PROFILE PREFORMED THERMOPLASTIC (90 MIL.).

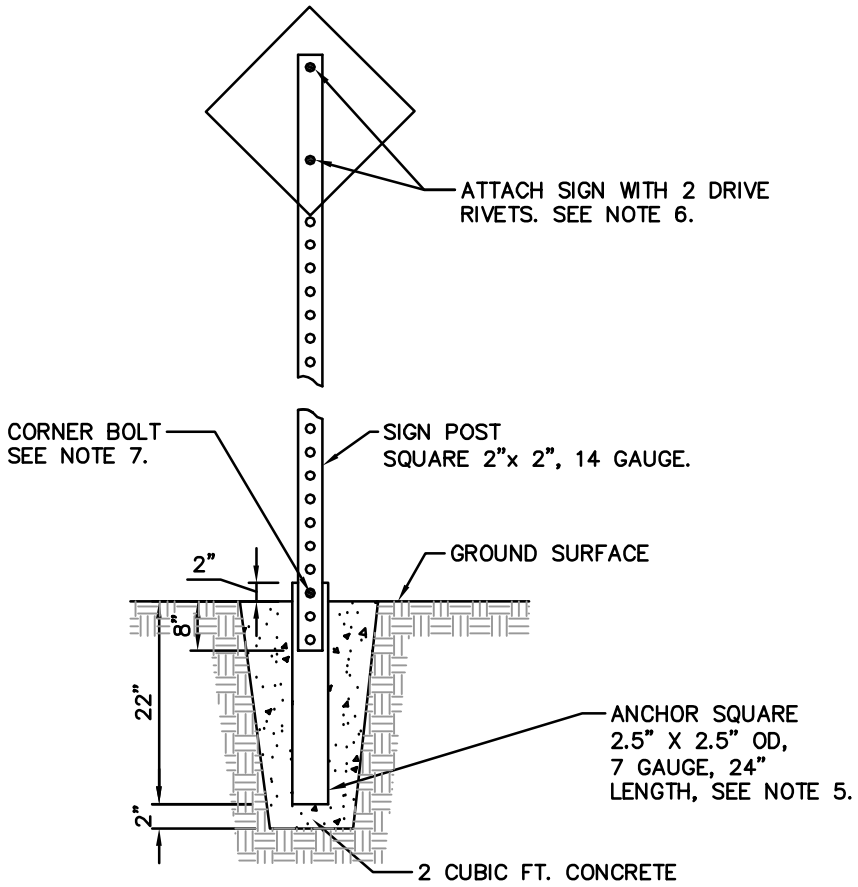
2. DIMENSIONS:
ADJUSTMENTS TO DIMENSIONS SHALL BE APPROVED BY THE ENGINEER.



City of Bellevue

BIKE LANE MARKING

DRAWING NUMBER	TE-20
SCALE	NONE
REVISION DATE	12/07
DEPARTMENT	TRANS



SQUARE METAL POST

SIGN POST NOTES:

1. SIGN POST SHALL BE 2"x2" SQUARE STEEL POSTS, MINIMUM 14 GAUGE, WITH 7/16" DIE-PUNCHED KNOCKOUTS ON 1" CENTERS FULL LENGTH FOUR SIDES..
2. STOP AND YIELD SIGN POSTS SHALL HAVE ALTERNATING 1' BANDS OF RED AND WHITE 3M DIAMOND GRADE SHEETING. ALL OTHER POSTS SHALL BE UNSHEETED.
3. FOR IN-SIDEWALK INSTALLATIONS, CORE 4" DIAM. HOLE. ANCHOR LENGTH MAY BE DECREASED TO 12".
4. POST SHALL BE ROLLED CARBON SHEET STEEL, SHALL MEET THE REQUIREMENTS OF ASTM A653 GRADE 50, AND SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A653, G90, STRUCTURAL QUALITY GRADE 50.
5. ANCHOR SHALL HAVE FOUR 7/16" DIAM. HOLES, ONE EACH SIDE, 2" FROM TOP END. ANCHOR SHALL MEET THE REQUIREMENTS OF ASTM A500 GRADE B AND SHALL BE HOT DIPPED GALVANIZED.
6. DRIVE RIVETS TO BE TL3806 3/8" DIA.
7. CORNER BOLTS TO BE TLCB516M.

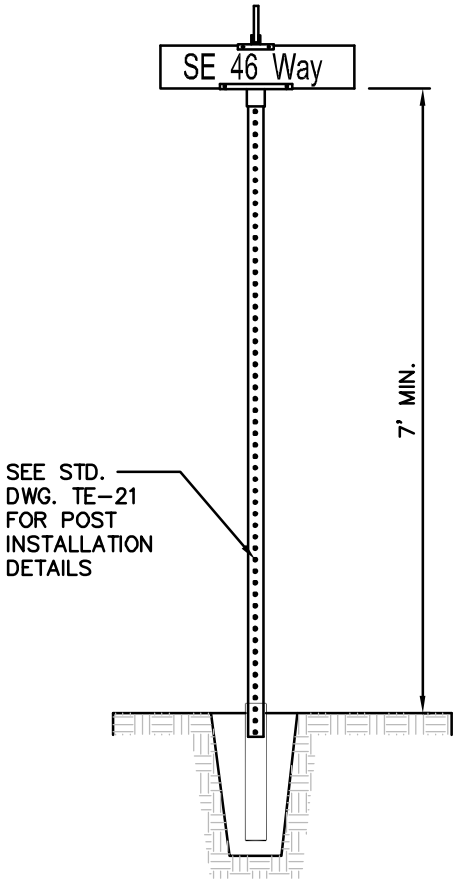
SIGN INSTALLATION NOTES

1. SIGN SHEETING REQUIREMENTS:
   STOP, YIELD, KEEP RT, TURN RESTRICTION, LARGE ARROW, CHEVRON, CURVE/TURN WARNING, PED & ADV PED CROSSING, SCHOOL AND ADV SCHOOL CROSSING, STOP/YIELD/SIGNAL AHEAD, OBJECT MARKERS, END OF ROAD MARKER, ALL STREET NAME SIGNS AND ALL MAST ARM OR OVERHEAD MOUNTED SIGNS SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL OTHER SIGNS SHALL BE 3M HIGH INTENSITY PRISMATIC SHEETING, OR APPROVED EQUAL.
2. SIGN HEIGHT SHALL BE 7' FROM BOTTOM OF SIGN TO STREET OR SIDEWALK OR 6.5' FROM BOTTOM OF LOWER SIGN FOR MULTIPLE SIGNS ON ONE POST. EXCEPTIONS ONLY AS SPECIFICALLY STATED ON PLANS OR APPROVED BY THE ENGINEER.

City of Bellevue

SIGN INSTALLATION DETAILS

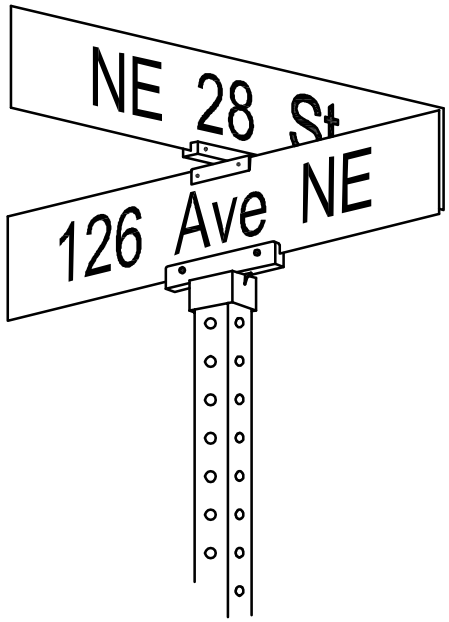
DRAWING NUMBER	TE-21
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

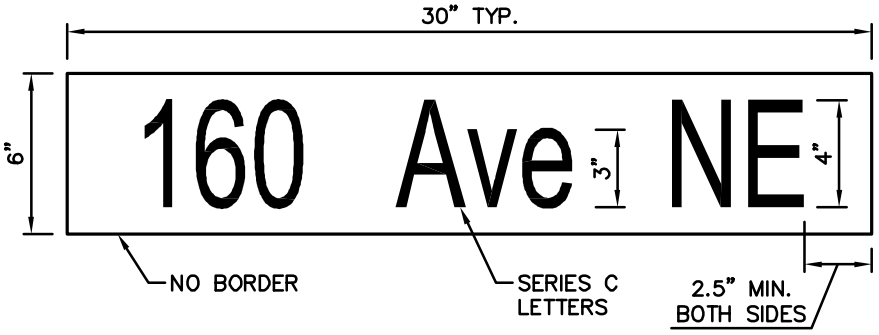


TYPICAL INSTALLATION

ABBREVIATIONS:

STREET =	St
AVENUE =	Ave
PLACE =	Pl
WAY =	Way OR Wy
BOULEVARD =	Blvd
PARKWAY =	Pkwy
LANE =	Ln
COURT =	Ct
DRIVE =	Dr
ROAD =	Rd
KEY =	Key
CONNECTOR =	Conn
CIRCLE =	Cir
TERRACE =	Ter





159 Pl SE

SE 23 Ln

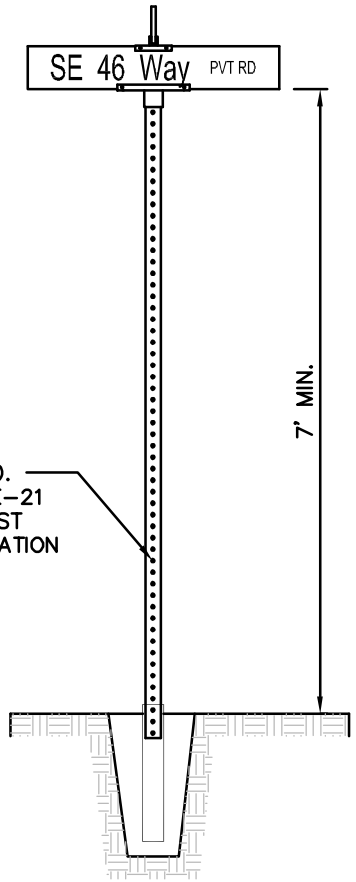
NOTES:

1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. TYPE 1 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, NO BORDER, DOUBLE-SIDED.
3. SIGN BLADE SHALL BE 6" EXTRUDED ALUMINUM, TREATED, 0.080 GAUGE, EXCEPT 9" BLADE SHALL BE USED FOR STREET NAMES CONTAINING LOWER CASE LETTERS WITH DESCENDING STEMS OR TAILS (E.G., "g", "p", "y").
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C, 4" UPPER AND LOWER CASE.
7. POSTS SHALL BE 2"x2" SQUARE STEEL POSTS AS PER STD DWG TE-21.
8. MOUNTING HARDWARE SHALL BE ZUMAR Z12RDSQ200EX CAP AND ZUMAR 812EX90X CROSSPIECE, OR APPROVED EQUAL.
9. LAYOUT OF NON-NUMBERED STREET NAME LETTERING (E.G., Newport Key, Vineyard Crest) WILL BE PROVIDED BY THE ENGINEER.

City of Bellevue

STREET NAME SIGN – TYPE 1
NON-ARTERIAL STREET

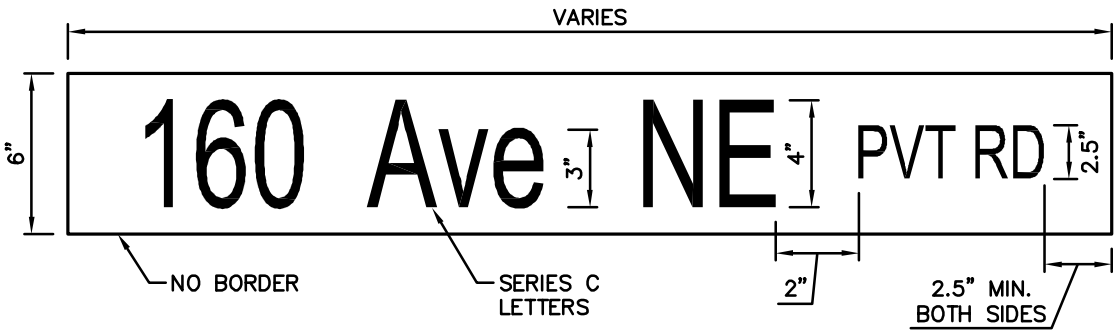
DRAWING NUMBER	TE-22A
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



TYPICAL INSTALLATION

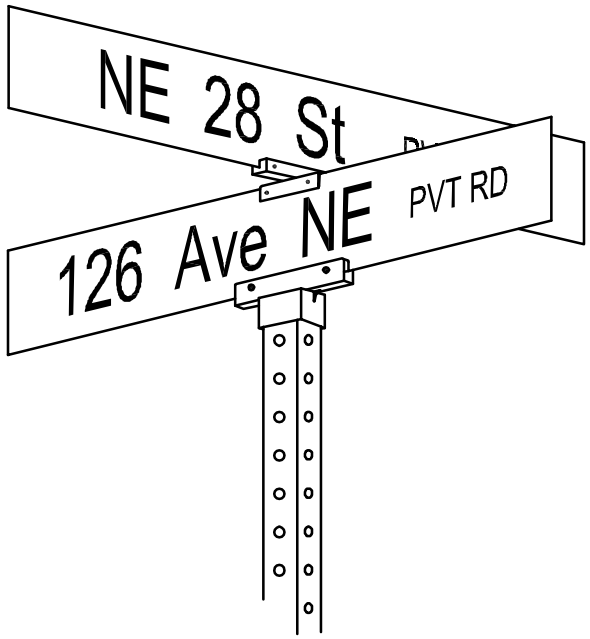
ABBREVIATIONS:

STREET =	St
AVENUE =	Ave
PLACE =	Pl
WAY =	Way OR Wy
BOULEVARD =	Blvd
PARKWAY =	Pkwy
LANE =	Ln
COURT =	Ct
DRIVE =	Dr
ROAD =	Rd
KEY =	Key
CONNECTOR =	Conn
CIRCLE =	Cir
TERRACE =	Ter



159 Pl SE PVT RD

SE 23 Ln PVT RD



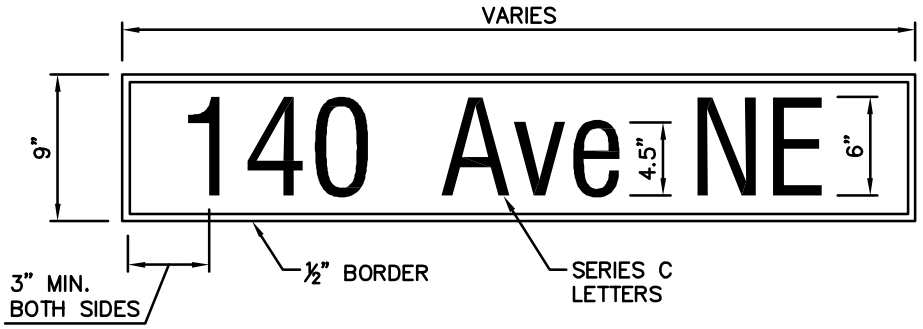
NOTES:

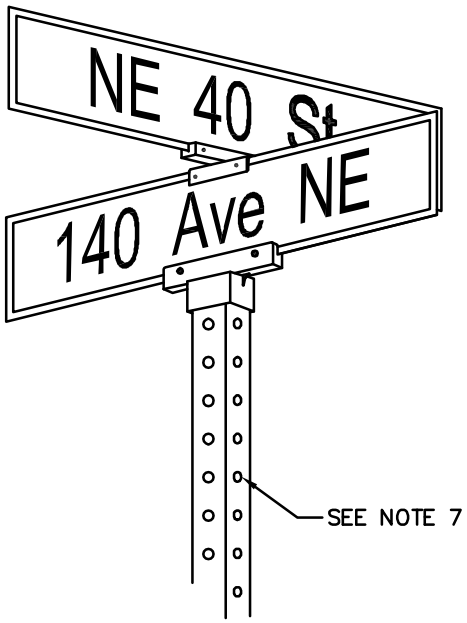
1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. TYPE 1 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, NO BORDER, DOUBLE-SIDED.
3. SIGN BLADE SHALL BE 6" EXTRUDED ALUMINUM, TREATED, 0.080 GAUGE.
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C, 4" UPPER AND LOWER CASE.
7. POSTS SHALL BE 2"x2" SQUARE STEEL POSTS AS PER STD DWG TE-21.
8. MOUNTING HARDWARE SHALL BE ZUMAR Z12RDSQ200EX CAP AND ZUMAR 812EX90X CROSSPIECE, OR APPROVED EQUAL.

City of Bellevue

STREET NAME SIGN (PRIVATE ROAD) – TYPE 1
NON-ARTERIAL STREET

DRAWING NUMBER	TE-22B
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS





ABBREVIATIONS:

STREET =	St
AVENUE =	Ave
PLACE =	Pl
WAY =	Way OR Wy
BOULEVARD =	Blvd
PARKWAY =	Pkwy
LANE =	Ln
COURT =	Ct
DRIVE =	Dr
ROAD =	Rd
KEY =	Key
CONNECTOR =	Conn
CIRCLE =	Cir
TERRACE =	Ter

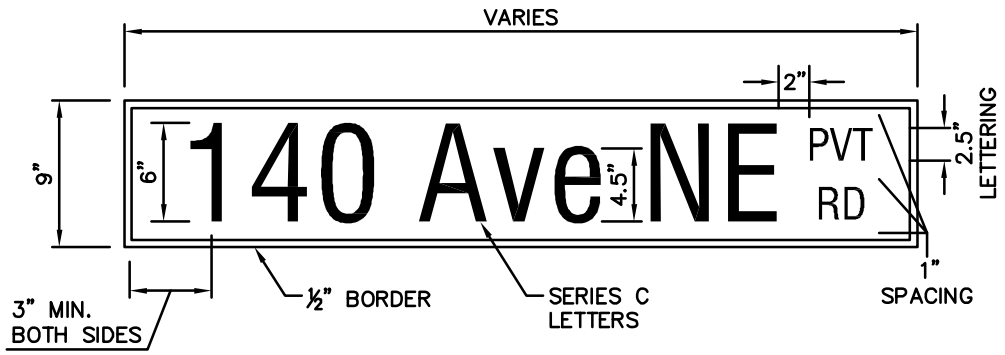
NOTES:

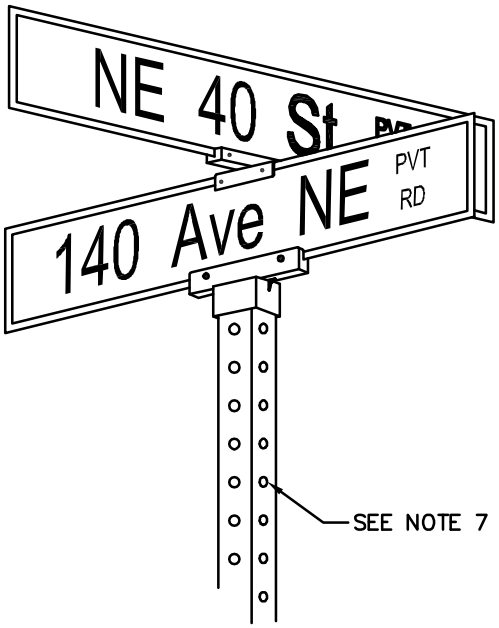
1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. TYPE 2 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, ½" WHITE BORDER, NO MARGIN, DOUBLE-SIDED.
3. SIGN BLADE SHALL BE 9" EXTRUDED ALUMINUM, TREATED, 0.080 GAUGE, EXCEPT 12" BLADE SHALL BE USED FOR STREET NAMES CONTAINING LOWER CASE LETTERS WITH DESCENDING STEMS OR TAILS (E.G., "g", "p", "y").
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C, 6" UPPER AND LOWER CASE.
7. POSTS SHALL BE 2"x2" SQUARE STEEL POSTS AS PER STD DWG TE-21.
8. MOUNTING HARDWARE SHALL BE ZUMAR Z12RDSQ200EX CAP AND ZUMAR 812EX90X CROSSPIECE, OR APPROVED EQUAL.
9. LAYOUT OF NON-NUMBERED STREET NAME LETTERING (E.G., Bellevue Way SE, Coal Creek Pkwy SE) WILL BE PROVIDED BY THE ENGINEER.

City of Bellevue

STREET NAME SIGN – TYPE 2
ARTERIAL STREET

DRAWING NUMBER	TE-23A
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS





NOTES:

1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. TYPE 2 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, ½" WHITE BORDER, NO MARGIN, DOUBLE-SIDED.
3. SIGN BLADE SHALL BE 9" EXTRUDED ALUMINUM, TREATED, 0.080 GAUGE.
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C, 6" UPPER AND LOWER CASE.
7. POSTS SHALL BE 2"x2" SQUARE STEEL POSTS AS PER STD DWG TE-21.
8. MOUNTING HARDWARE SHALL BE ZUMAR Z12RDSQ200EX CAP AND ZUMAR 812EX90X CROSSPIECE, OR APPROVED EQUAL.

ABBREVIATIONS:

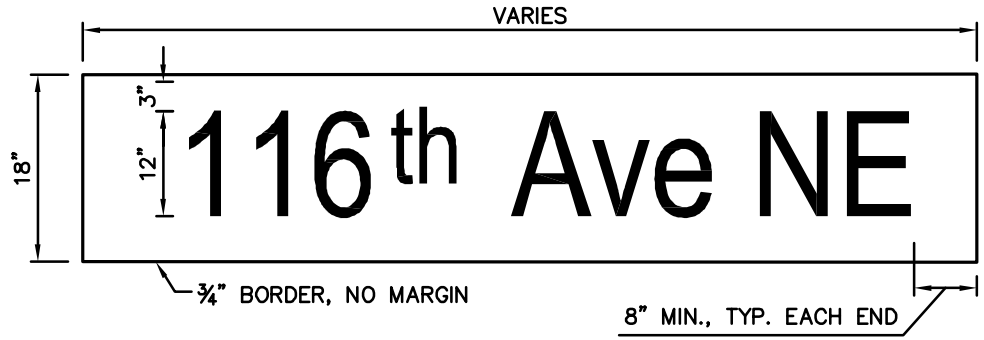
STREET =	St
AVENUE =	Ave
PLACE =	Pl
WAY =	Way OR Wy
BOULEVARD =	Blvd
PARKWAY =	Pkwy
LANE =	Ln
COURT =	Ct
DRIVE =	Dr
ROAD =	Rd
KEY =	Key
CONNECTOR =	Conn
CIRCLE =	Cir
TERRACE =	Ter

City of Bellevue

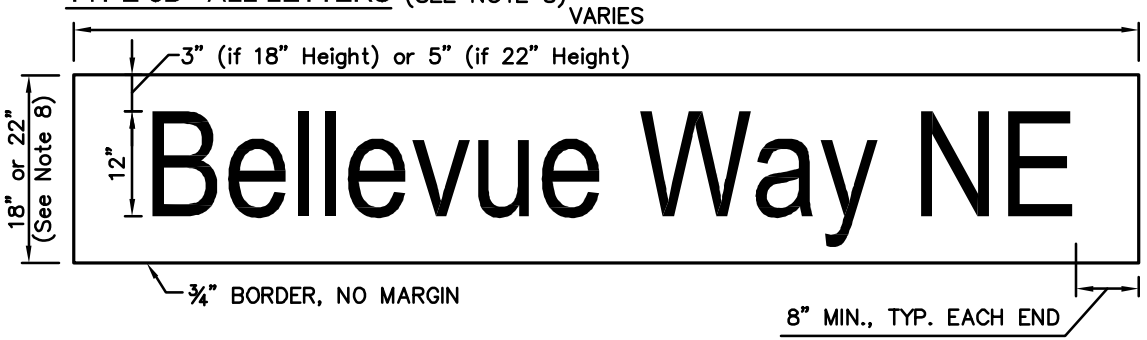
STREET NAME SIGN (PRIVATE ROAD) – TYPE 2
ARTERIAL STREET

DRAWING NUMBER	TE-23B
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

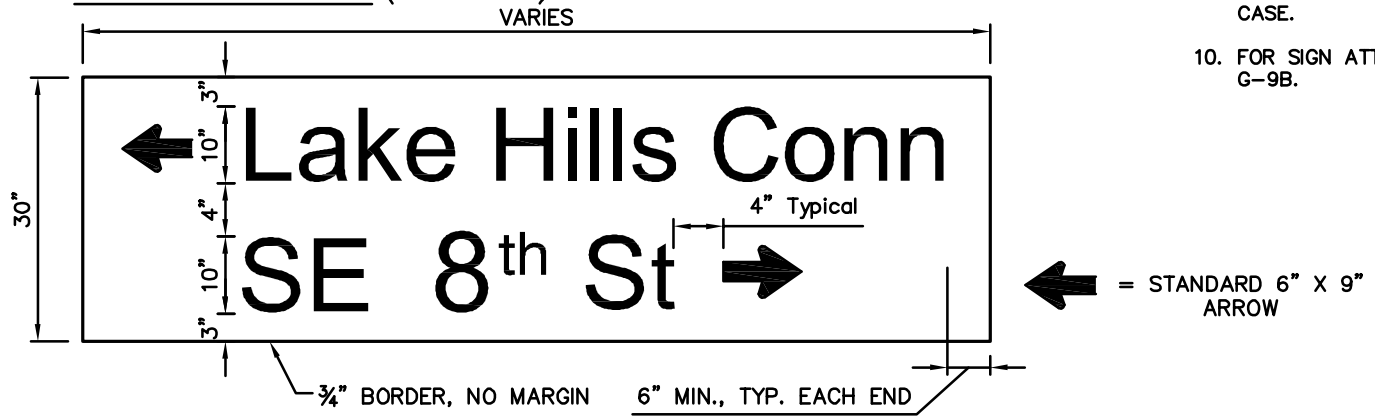
TYPE 3A - NUMERIC (SEE NOTE 7)



TYPE 3B - ALL LETTERS (SEE NOTE 8)



TYPE 3C - TWO LINES (SEE NOTE 9)



= STANDARD 6" X 9" ARROW

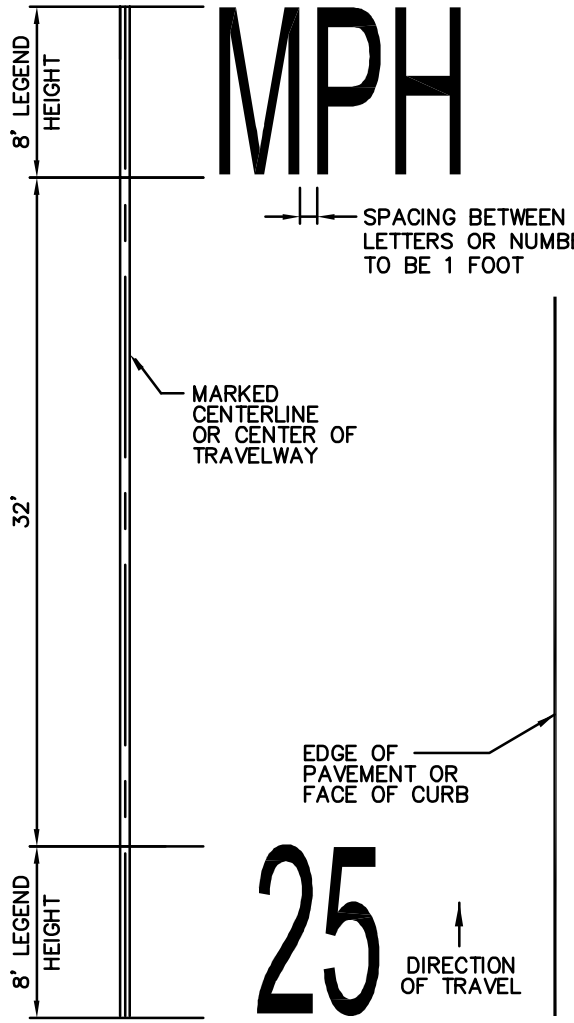
NOTES:

1. SIGNING MATERIAL AND FABRICATION SHALL BE IN ACCORDANCE WITH SECTION 9-28 OF THE WSDOT STANDARD SPECIFICATIONS, CURRENT EDITION.
2. ALL TYPE 3 SIGNS SHALL BE WHITE LETTERING ON GREEN BACKGROUND, ¾" WHITE BORDER, NO MARGIN, SINGLE-SIDED.
3. SIGN BLADE SHALL BE ALUMINUM, TREATED, 0.125 GAUGE.
4. SIGN SHEETING SHALL BE 3M DIAMOND GRADE DG3 REFLECTIVE SHEETING SERIES 4000.
5. LETTERING SHALL BE FORMED USING 3M ELECTROCUT (EC) FILM SERIES 1170.
6. FONT SHALL BE HIGHWAY GOTHIC SERIES C.
7. TYPE 3A SIGN SHALL HAVE 12" UPPER AND LOWER CASE EXCEPT NUMERICAL SUFFIX (E.G., th, st) SHALL BE 10" LOWER CASE.
8. TYPE 3B SIGN SHALL HAVE 12" UPPER AND LOWER CASE. SIGN BLADE SHALL BE 18" TALL, EXCEPT 22" BLADE SHALL BE USED FOR STREET NAMES CONTAINING LOWER CASE LETTERS WITH DESCENDING STEMS OR TAILS (E.G., "g", "p", "y").
9. TYPE 3C SIGN SHALL HAVE 10" UPPER AND LOWER CASE EXCEPT NUMERICAL SUFFIX (E.G., th, st) SHALL BE 8" LOWER CASE.
10. FOR SIGN ATTACHMENT DETAILS, SEE WSDOT STANDARD PLAN G-9B.

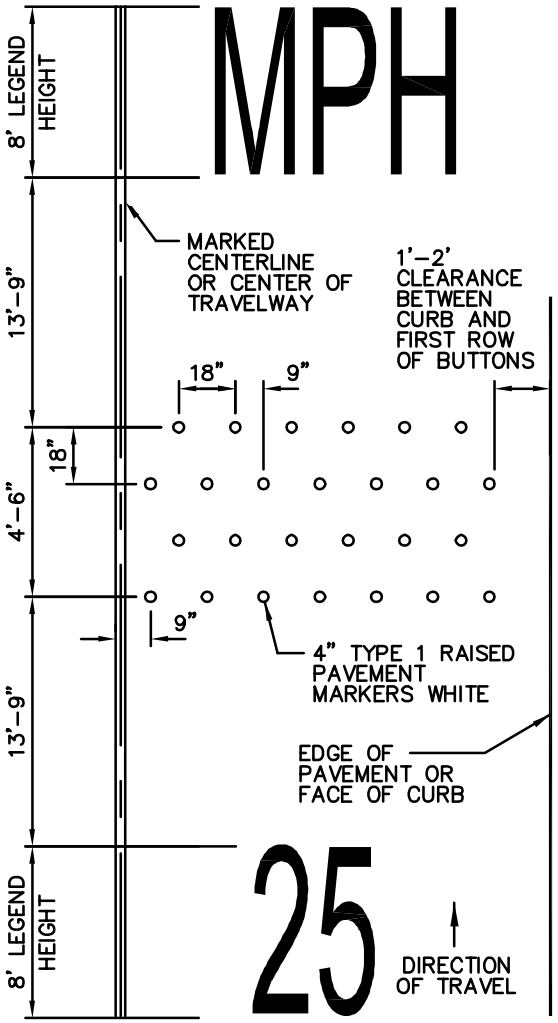
City of Bellevue

STREET NAME SIGN – TYPES 3A, 3B, & 3C; MAST ARM

DRAWING NUMBER	TE-24
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



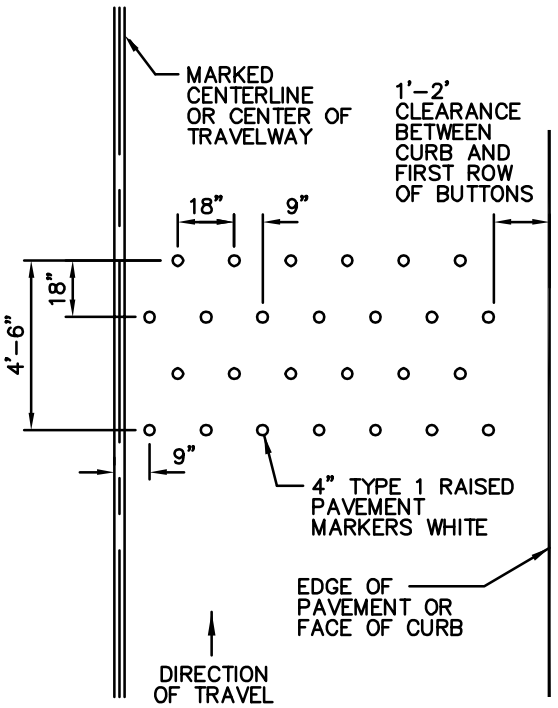
25 MPH LEGEND



RUMBLE STRIP WITH 25 MPH LEGEND

NOTES:

1. RUMBLE STRIP SHALL BE PLACED ACROSS ENTIRE ROADWAY WIDTH IF NO CENTERLINE EXISTS.
2. LEGEND MATERIAL USED SHALL BE PREFORMED THERMOPLASTIC (125 MIL. MIN.), UNLESS OTHERWISE APPROVED BY THE ENGINEER.



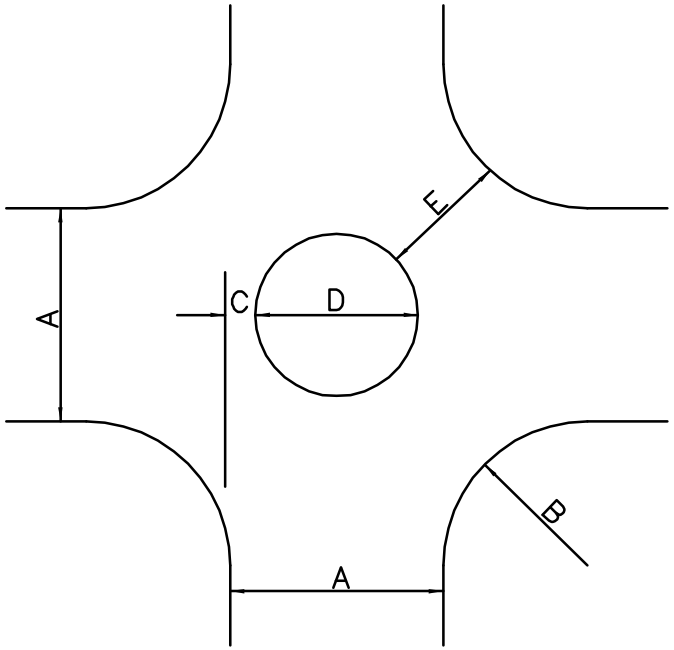
RUMBLE STRIP

City of Bellevue

RUMBLE STRIP AND 25 MPH LEGEND

DRAWING NUMBER	TE-25
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

GEOMETRY



DIMENSIONS

A STREET WIDTH	B CURB RETURN RADIUS	C OFFSET DISTANCE	D CIRCLE DIAMETER	E OPENING WIDTH
20'	<15'	RECONSTRUCT CURBS		
	15'	5.5'	9'	16'+
	18'	5.0'	10'	17'+
	20'	4.5'	11'	18'–
	25'	4.0'	12'	19'+
24'	<12'	RECONSTRUCT CURBS		
	12'	5.5'	13'	16'
	15'	5.0'	14'	17'–
	20'	4.5'	15'	18'+
	25'	3.5'	17'	20'–
25'	<12'	RECONSTRUCT CURBS		
	12'	5.5'	14'	16'+
	15'	5.0'	15'	17'–
	18'	4.5'	16'	18'–
	20'	4.5'	16'	18'+
	25'	3.5'	18'	20'–
30'	10'	5.5'	19'	16'+
	12'	5.0'	20'	17'–
	15'	5.0'	20'	17'+
	18'	4.5'	21'	18'+
	20'	4.0'	22'	19'+
	25'	3.0'	24'	20'
32'	10'	5.5'	21'	16'+
	12'	5.0'	22'	17'–
	15'	4.5'	23'	18'–
	18'	4.0'	24'	19'–
	20'	4.0'	24'	19'+
	25'	2.5'	27'	20'
36'	10'	5.0'	26'	17'–
	12'	5.0'	26'	17'+
	15'	4.5'	27'	18'+
	18'	4.0'	28'	19'+
	20'	3.5'	29'	20'–
	25'	1.5'	33'	20'
40'	10'	5.0'	30'	17'+
	12'	4.5'	31'	18'+
	15'	4.0'	32'	19'–
	18'	3.5'	33'	20'–
	20'	3.0'	34'	20'
	25'	1.0'	38'	20'

NOTES:

1. USE DIMENSION SCHEDULE AS A DESIGN GUIDE. FINAL DIMENSIONS TO BE DETERMINED BY THE ENGINEER.
2. FOR PLANTER ISLAND SPECIFICATIONS SEE TRAFFIC CIRCLE DETAIL TE–27.

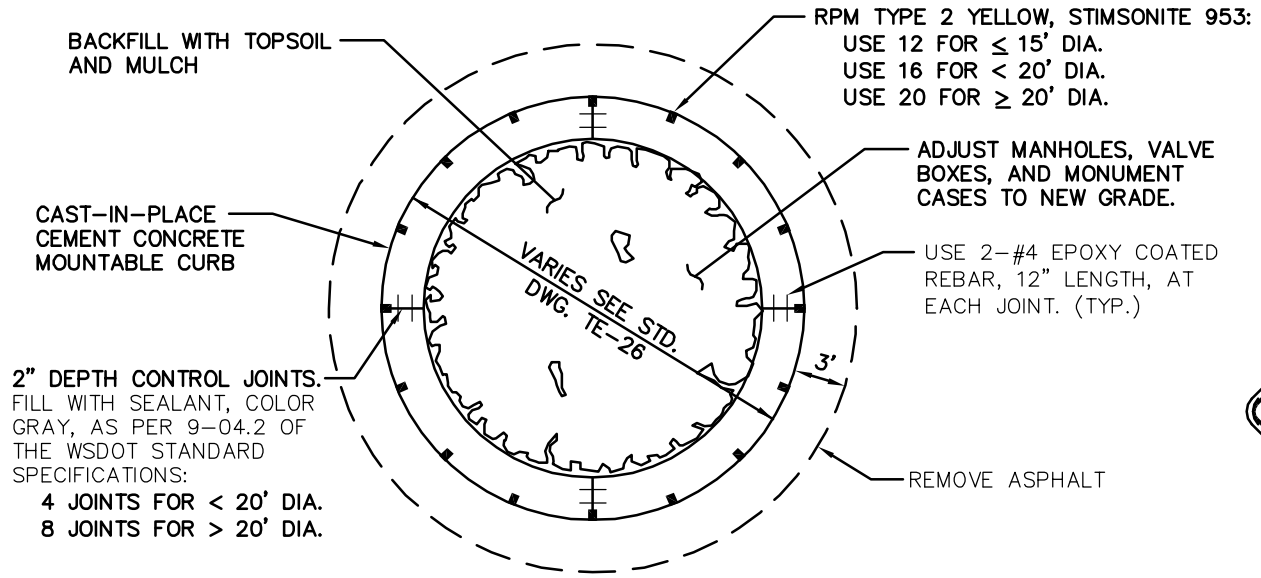
OPTIMUM CRITERIA

OFFSET DISTANCE (C)	OPENING WIDTH (E)
5.5' MAX.	16' MIN.
5.0'	17' ±
4.5'	18' ±
4.0'	19' ±
3.5' OR LESS	20' ±

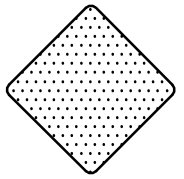
City of Bellevue

TRAFFIC CIRCLE DIMENSIONS

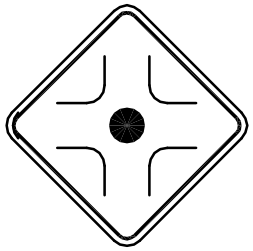
DRAWING NUMBER	TE–26
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS



TYPICAL TRAFFIC CIRCLE

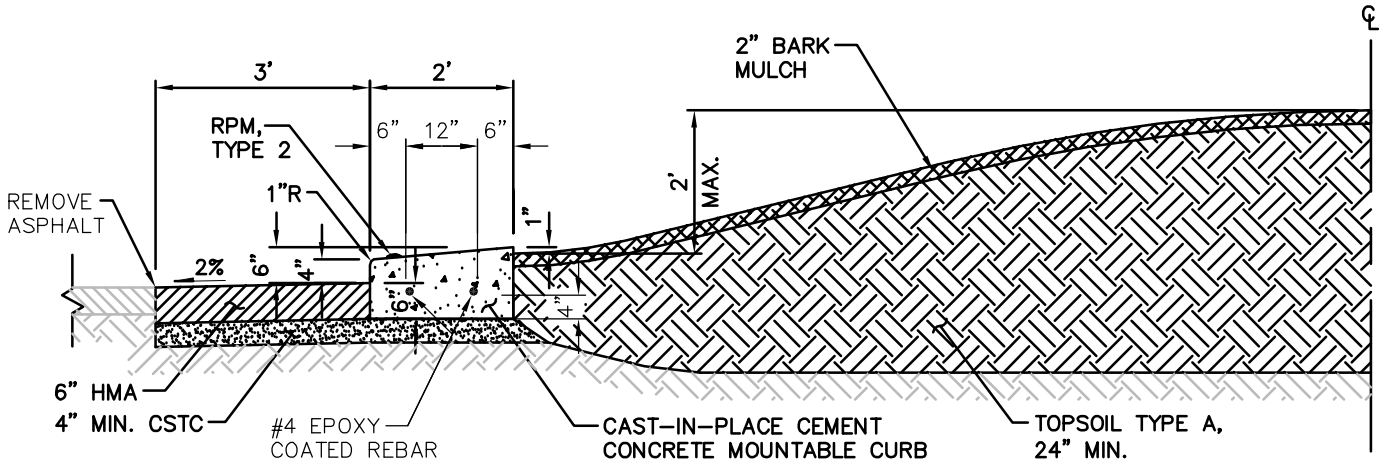


18" X 18" YELLOW HIGH INTENSITY TYPE 1 OBJECT MARKER PLACED IN TRAFFIC CIRCLE FOR EACH APPROACH. ALL SIGNS TO BE MOUNTED ON SINGLE POST. LOCATION TO BE DETERMINED BY ENGINEER. SIGN HEIGHT: 5' FROM BOTTOM OF LOWER SIGN TO BARK MULCH.



30" X 30" BLACK ON YELLOW PLACED 75' TO 100' BACK FROM TRAFFIC CIRCLE ON EACH APPROACH. SEE STD. DWG. TE-21B FOR POST TYPE AND INSTALLATION.

SIGNING



TYPICAL SECTION

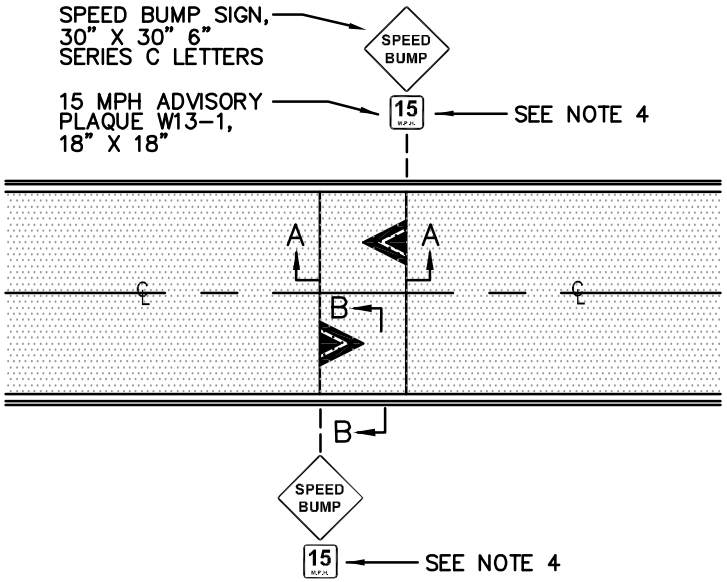
NOTES:

1. LANDSCAPING TO BE DETERMINED BY TRANSPORTATION/PARKS STAFF.
2. MONUMENT PROTECTION/PRESERVATION: NOTIFY C.O.B. SURVEYING PRIOR TO MONUMENT ADJUSTMENT. RAISE MONUMENT TO GRADE IN APPROPRIATE CASING.
3. CONCRETE SHALL BE AIR ENTRAINED CLASS 4000 PER SECTION 6-02 OF WSDOT STANDARD SPECIFICATIONS.

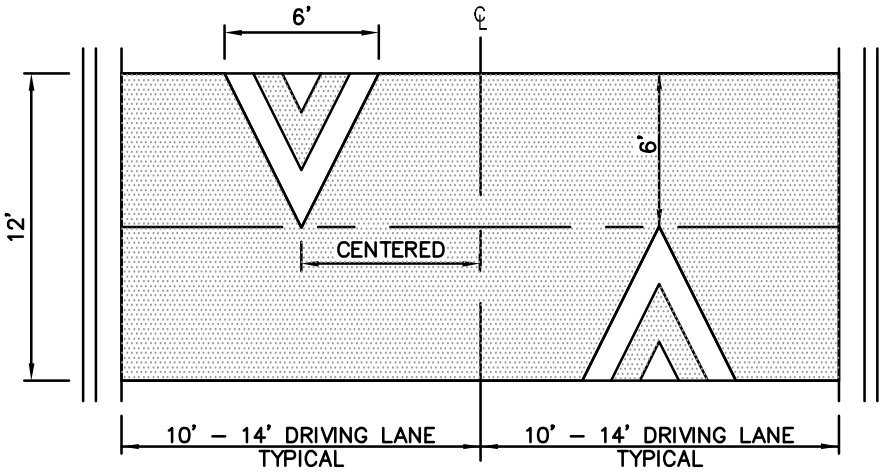
City of Bellevue

TRAFFIC CIRCLE DETAILS

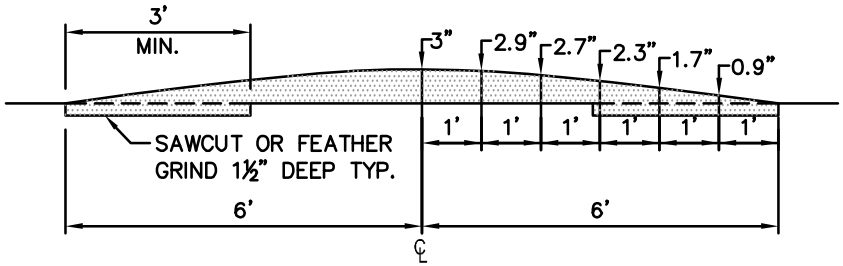
DRAWING NUMBER	TE-27
SCALE	NONE
REVISION DATE	3/10
DEPARTMENT	TRANS



SPEED HUMP MARKING AND SIGNING



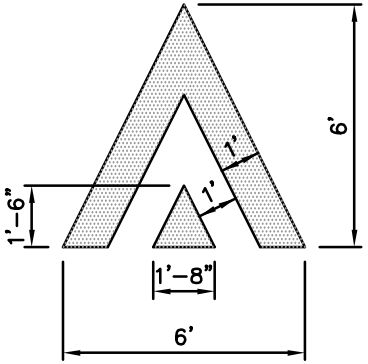
MARKING DETAIL



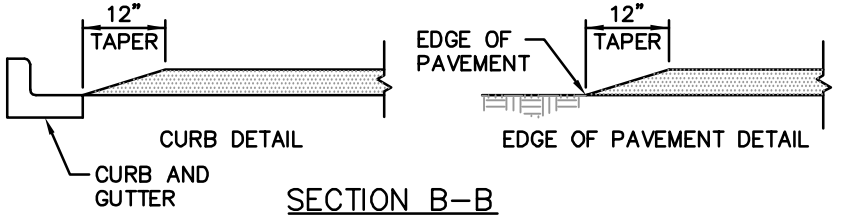
SECTION A–A

NOTES:

1. SAWCUT OR FEATHER GRIND TO KEY IN SPEED HUMP. SEE SECTION A–A.
2. SIGN LOCATIONS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
3. SPEED HUMP CHEVRON MARKING SHALL BE THERMOPLASTIC, HEAT FUSED PREFORMED, 90 MIL., OR EQUAL APPROVED BY THE ENGINEER.
4. FOR A SERIES OF SPEED HUMPS, USE THE ADVISORY SPEED PLAQUE AT ONLY THE FIRST SPEED HUMP IN EACH DIRECTION OF TRAVEL.
5. SPEED HUMP TO BE INSTALLED USING CITY PROVIDED TEMPLATE, 48 HOURS NOTICE REQUIRED.



CHEVRON DETAIL

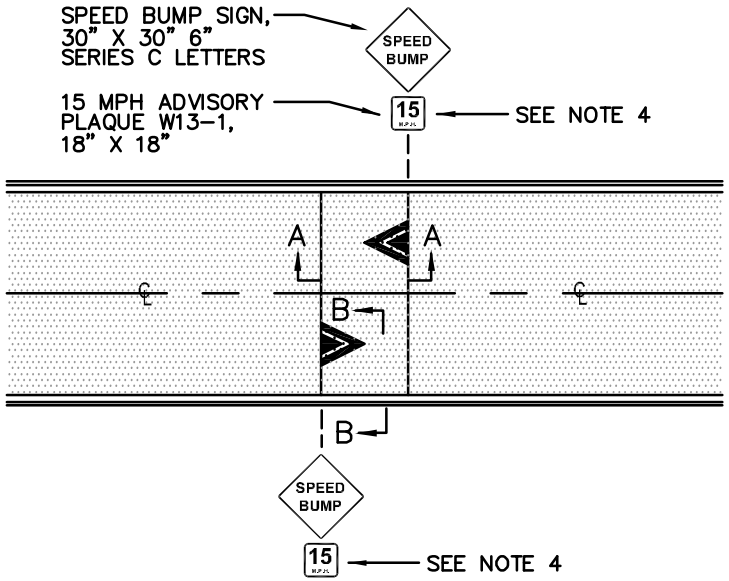


SECTION B–B

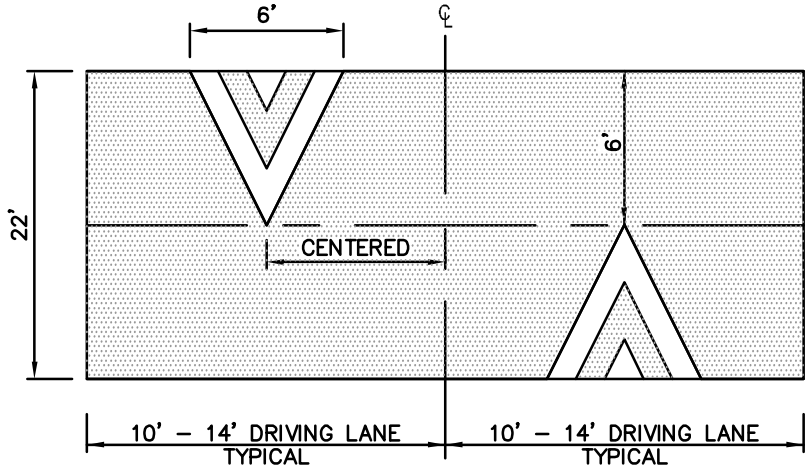
City of Bellevue

SPEED HUMP

DRAWING NUMBER	TE–28
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS



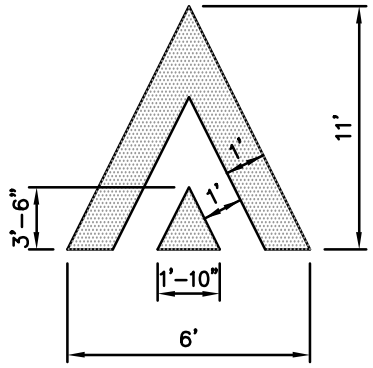
SPEED HUMP MARKING AND SIGNING



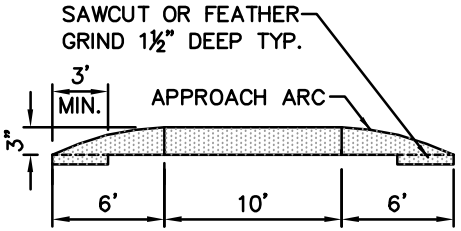
MARKING DETAIL

NOTES:

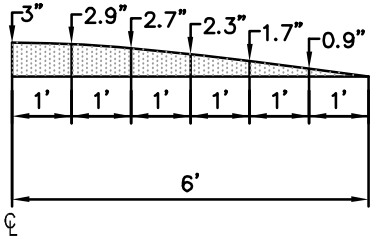
1. SAWCUT OR FEATHER GRIND TO KEY IN SPEED HUMP. SEE SECTION A–A.
2. SIGN LOCATIONS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.
3. SPEED HUMP CHEVRON MARKING SHALL BE THERMOPLASTIC, HEAT FUSED PREFORMED, 90 MIL., OR EQUAL APPROVED BY THE ENGINEER.
4. FOR A SERIES OF SPEED HUMPS, USE THE ADVISORY SPEED PLAQUE AT ONLY THE FIRST SPEED HUMP IN EACH DIRECTION OF TRAVEL.
5. SPEED HUMP TO BE INSTALLED USING CITY PROVIDED TEMPLATE, 48 HOURS NOTICE REQUIRED.



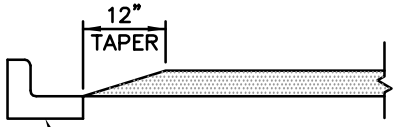
CHEVRON DETAIL

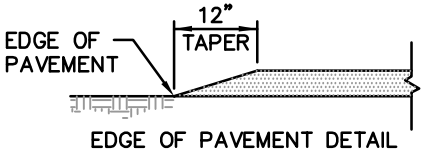


SECTION A–A



APPROACH ARC DETAIL



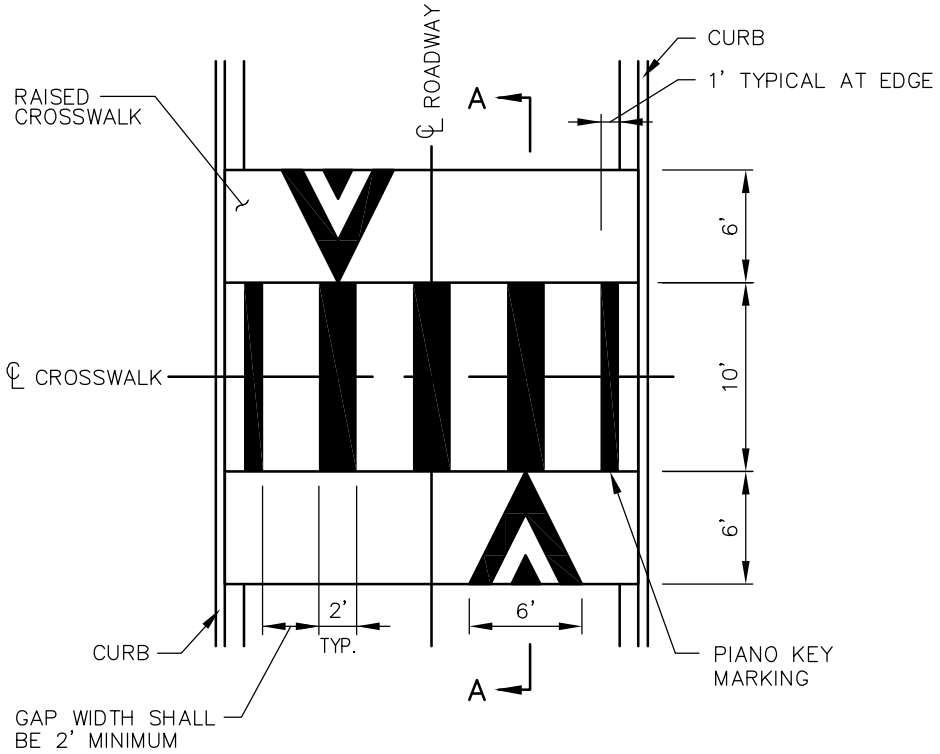


SECTION B–B

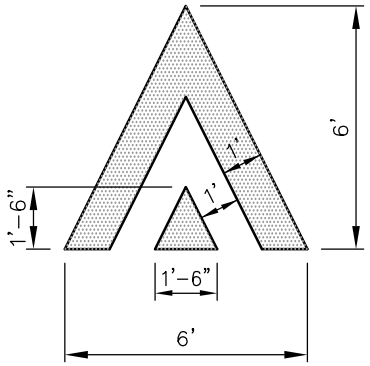
City of Bellevue

ELONGATED SPEED HUMP

DRAWING NUMBER	TE–29
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS



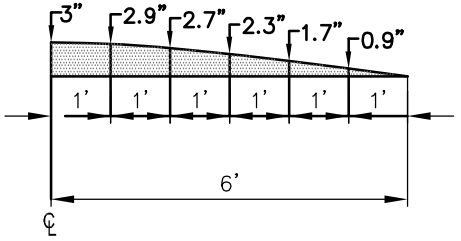
MARKING DETAIL



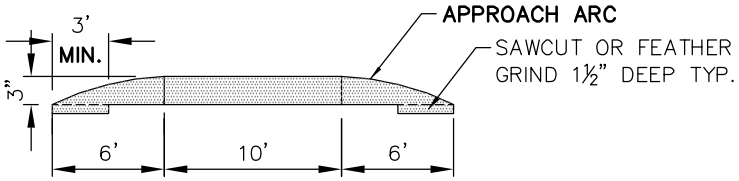
CHEVRON DETAIL

NOTES:

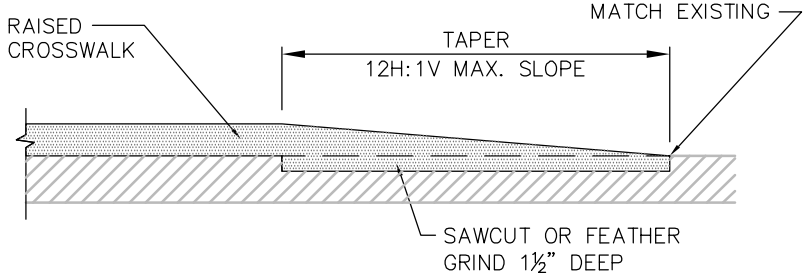
1. RAISED CROSSWALK CHEVRON MARKING SHALL BE THERMOPLASTIC, HEAT FUSED PREFORMED, 90 MIL., OR EQUAL APPROVED BY THE ENGINEER.
2. CHEVRON TO BE CENTERED IN THE DRIVING LANE. LOCATION SHALL BE VERIFIED BY THE ENGINEER PRIOR TO INSTALLATION.



APPROACH ARC DETAIL



SECTION A–A

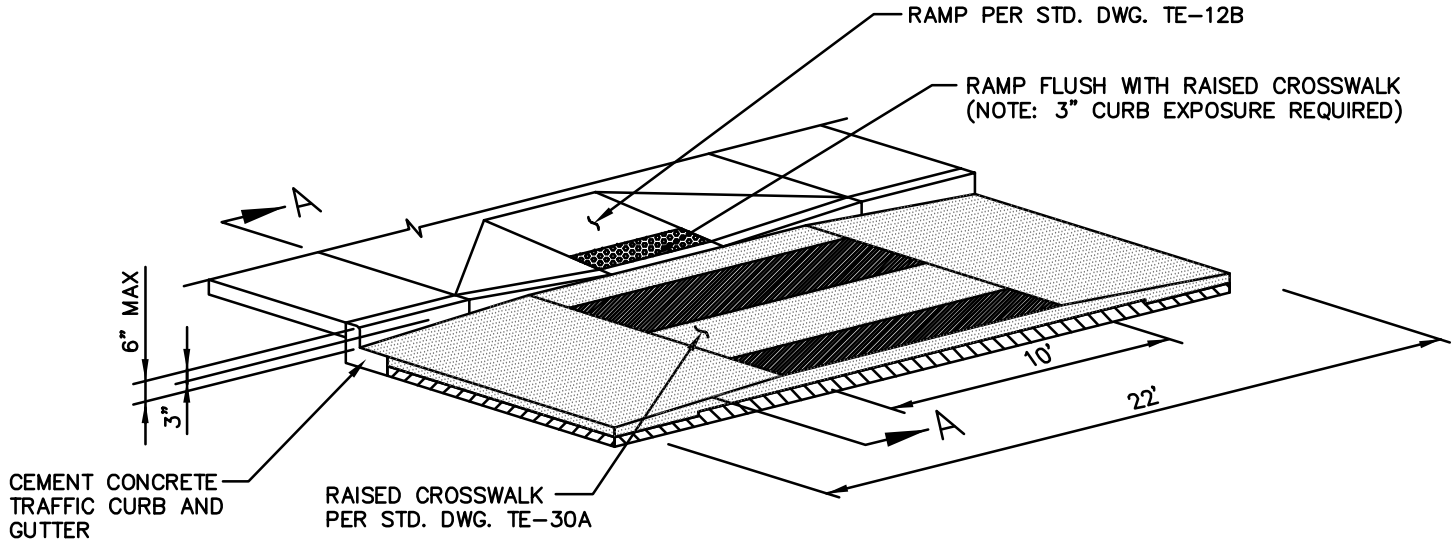


RAISED CROSSWALK/ASPHALT WIDENING SECTION

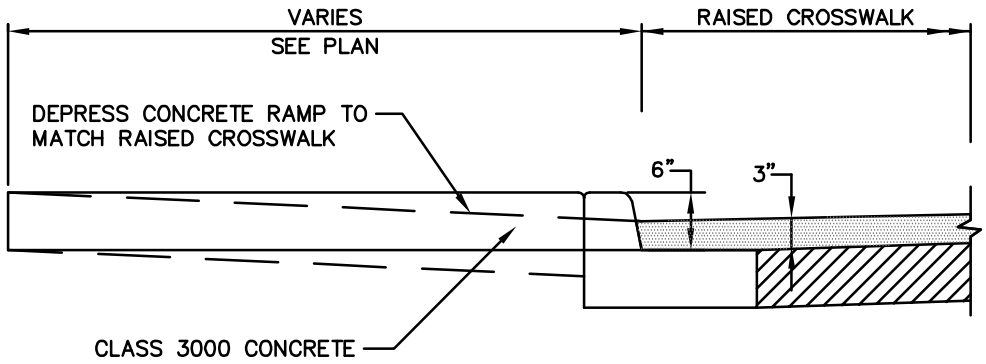
City of Bellevue

RAISED CROSSWALK

DRAWING NUMBER	TE–30A
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



MODIFIED SIDEWALK RAMP TYPE 1

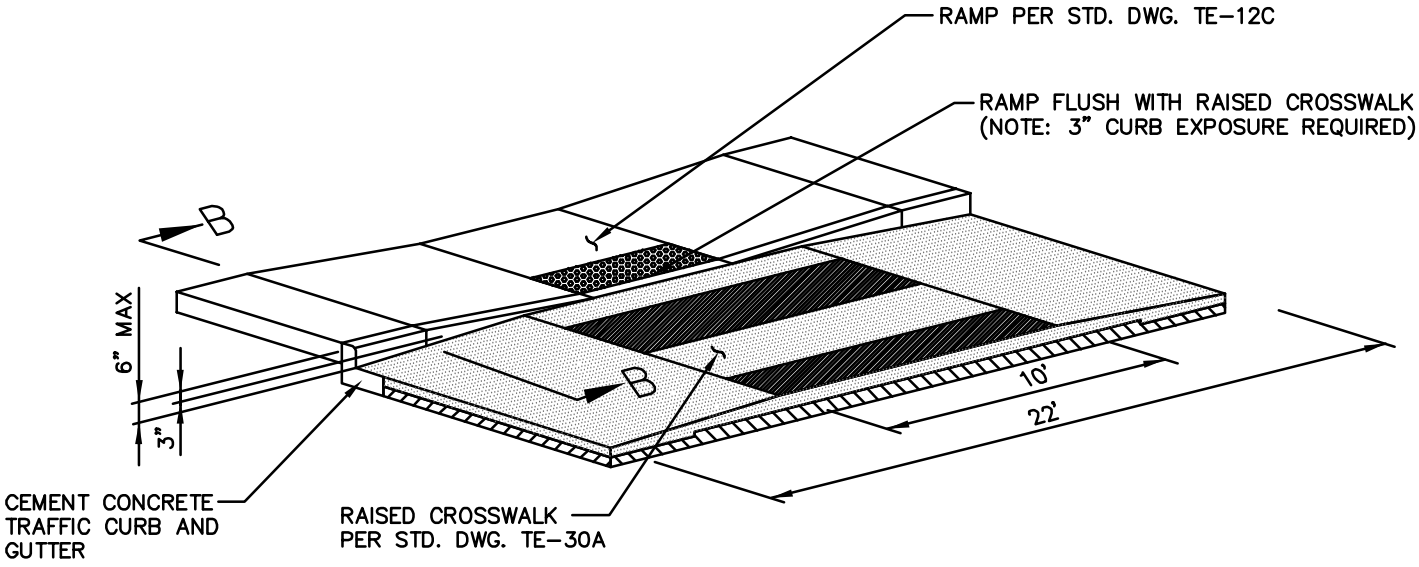


SECTION A-A

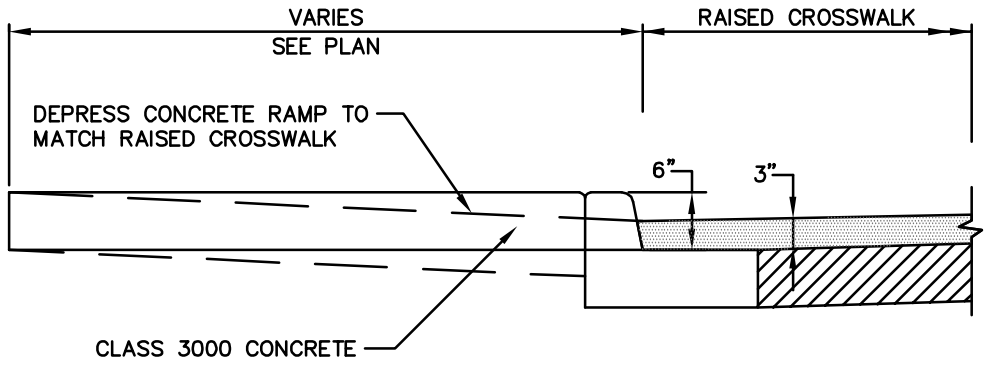
City of Bellevue

RAISED CROSSWALK WITH SIDEWALK RAMP TYPE 1

DRAWING NUMBER	TE-30B
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



MODIFIED SIDEWALK RAMP TYPE 2

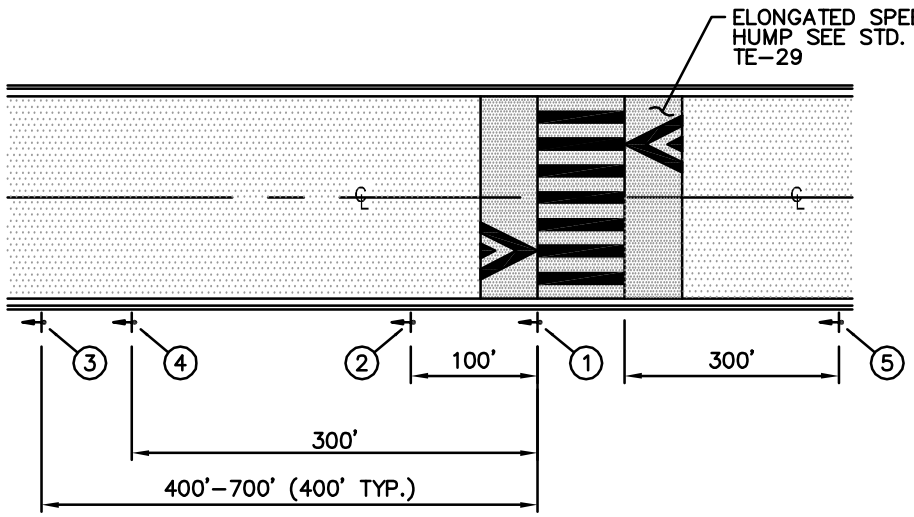


SECTION B-B

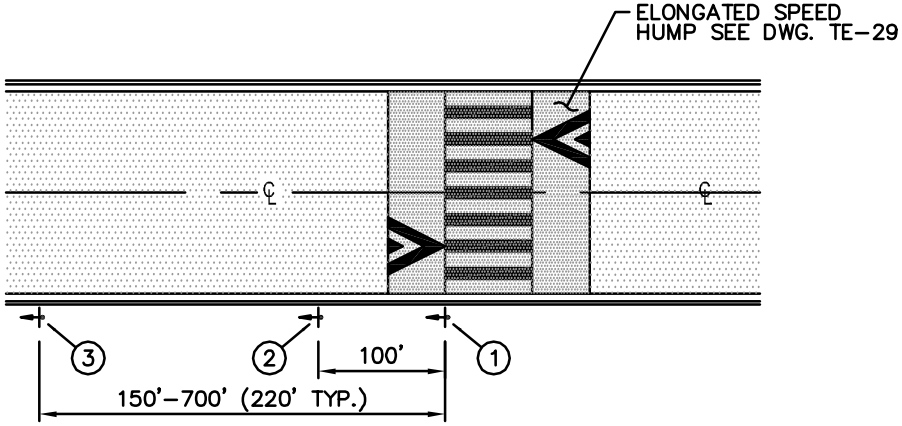
City of Bellevue

RAISED CROSSWALK WITH SIDEWALK RAMP TYPE 2

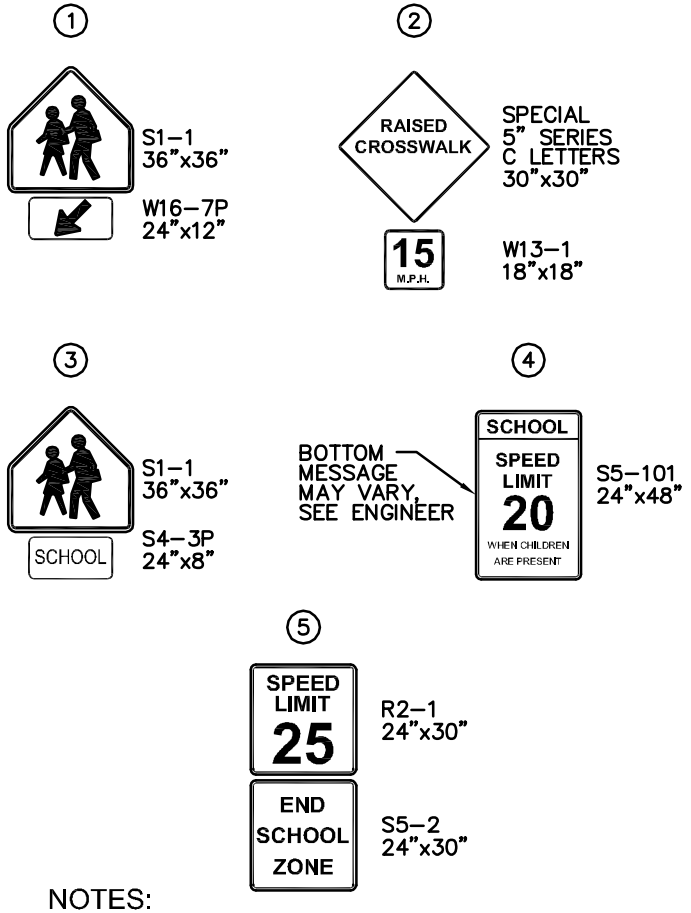
DRAWING NUMBER	TE-30C
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



WITHIN SCHOOL SPEED ZONE



OUTSIDE SCHOOL SPEED ZONE



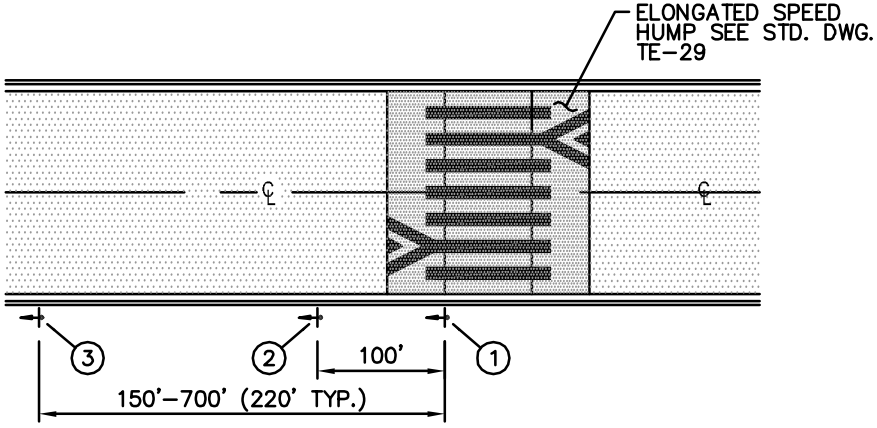
NOTES:

1. SIGNS ①, ②, ③, & THE "SCHOOL" LEGEND ON ④ AND ANY ADDITIONAL PLAQUES SHALL BE FLUORESCENT YELLOW-GREEN WITH BLACK LEGEND AND BORDER.
2. SIGN SPACING MAY BE ADJUSTED TO REFLECT SITE CONDITIONS AND SHALL BE APPROVED BY THE ENGINEER.

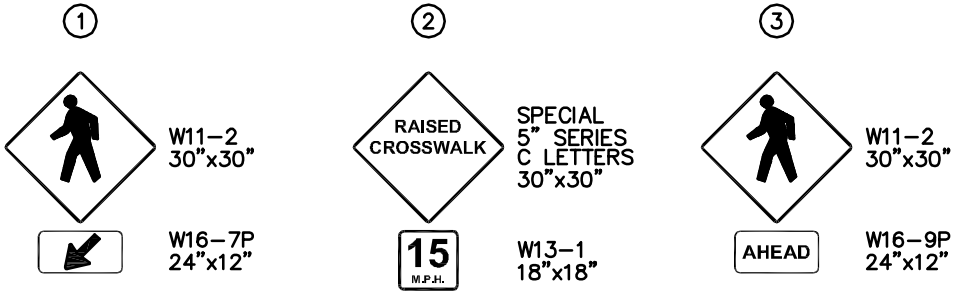
City of Bellevue

RAISED SCHOOL CROSSWALK SIGNING

DRAWING NUMBER	TE-31A
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



SIGNING PLACEMENT



NOTES:

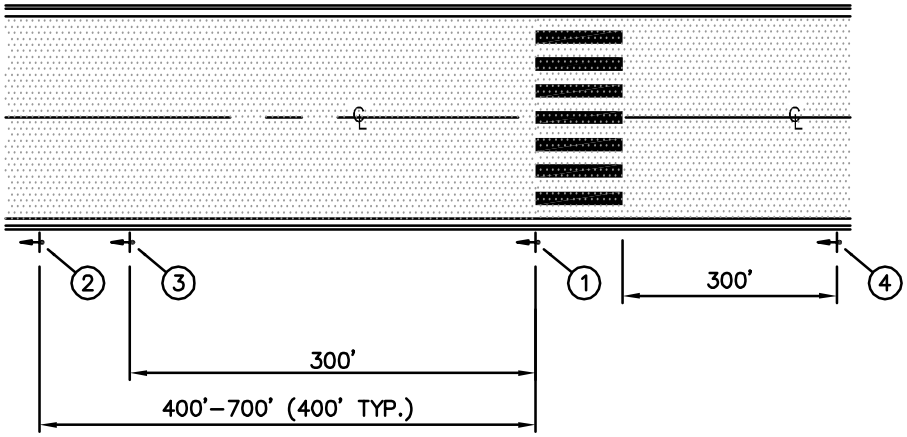
1. SIGNS SHALL HAVE YELLOW BACKGROUND WITH BLACK LEGEND AND BORDER.

SIGNING DETAIL

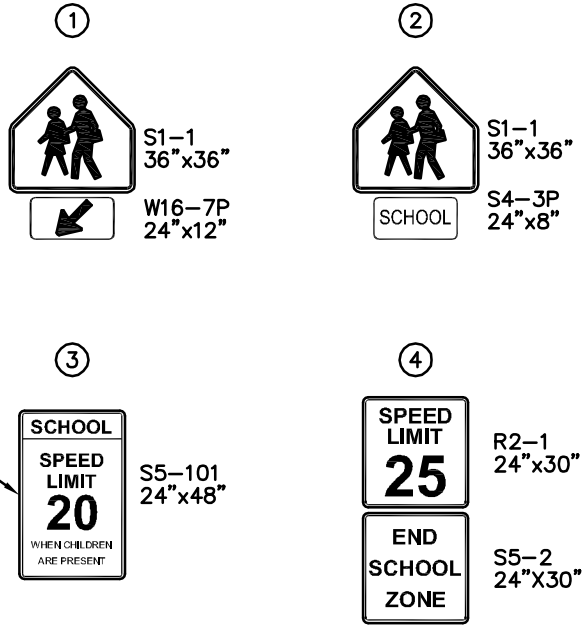
City of Bellevue

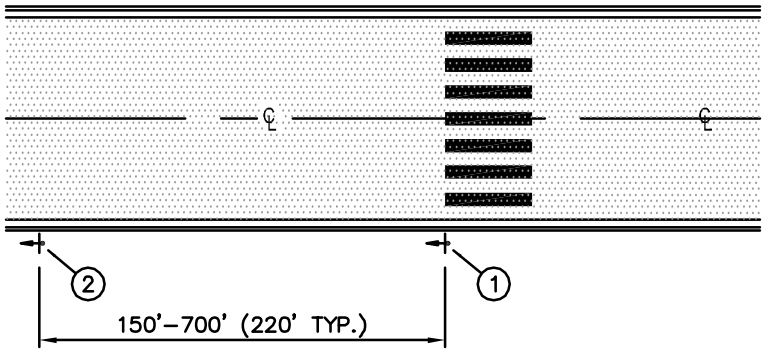
RAISED CROSSWALK SIGNING

DRAWING NUMBER	TE-31B
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



WITHIN SCHOOL ZONE





OUTSIDE SCHOOL ZONE

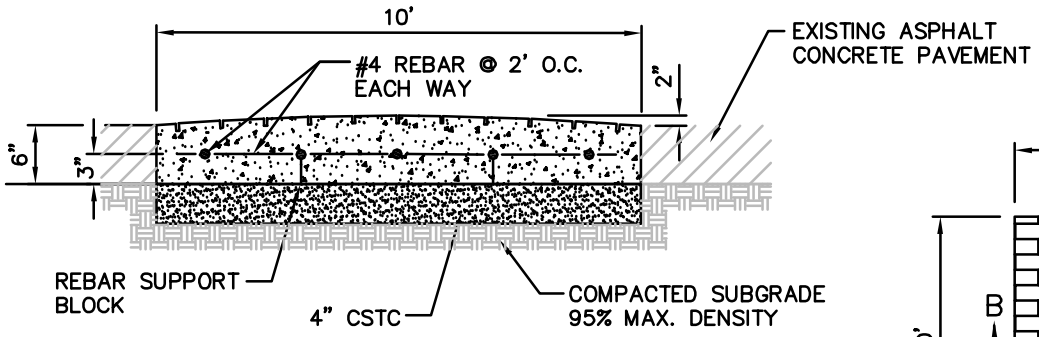
NOTES:

1. SIGNS (1), (2), & THE "SCHOOL" LEGEND ON (3) AND ANY ADDITIONAL PLAQUES SHALL BE FLUORESCENT YELLOW–GREEN WITH BLACK LEGEND AND BORDER.
2. SEE STD. DWG. TE–7A FOR CROSSWALK MARKINGS.

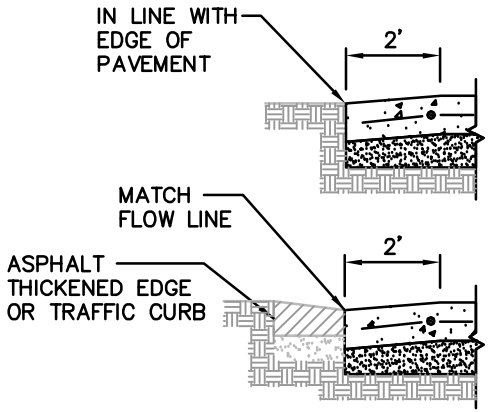
City of Bellevue

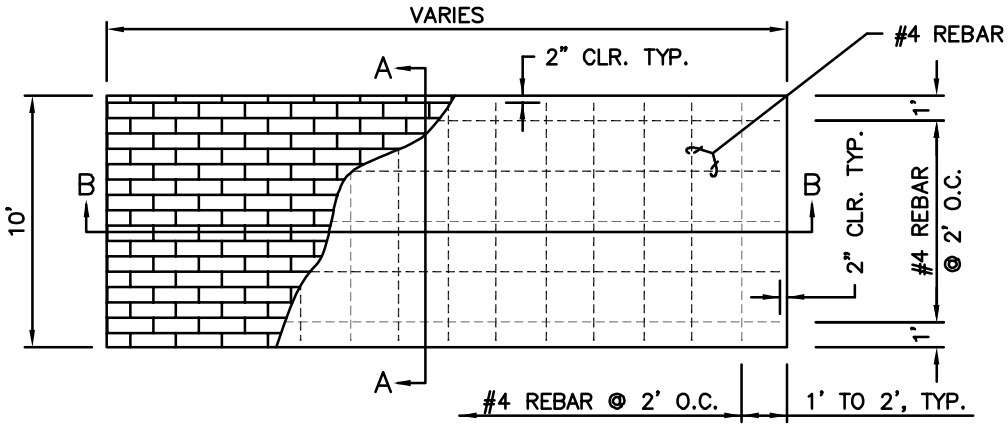
AT GRADE SCHOOL CROSSWALK SIGNING

DRAWING NUMBER	TE–31C
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

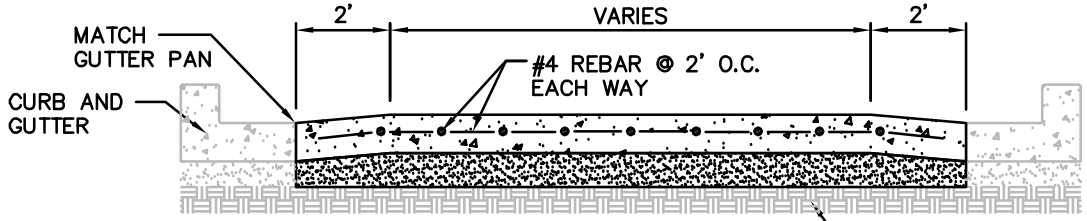


SECTION A–A





PLAN



SECTION B–B

COMPACTED SUBGRADE
95% MAX. DENSITY

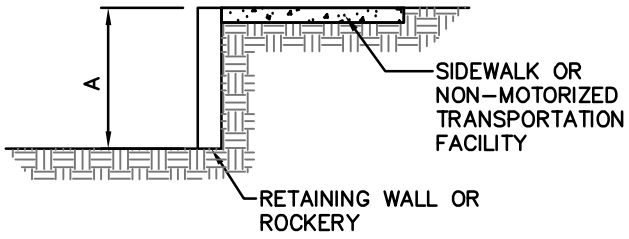
NOTES:

1. MATERIAL SHALL BE PATTERNED, COLORED CONCRETE WITH COLOR INTEGRAL TO THE CONCRETE.
2. COLOR AND PATTERN TO BE AS SPECIFIED ON THE PLANS.

City of Bellevue

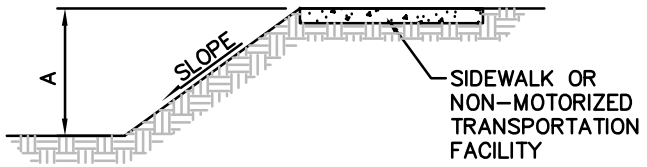
PATTERNED CONCRETE ENTRY TREATMENT

DRAWING NUMBER	TE–32
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



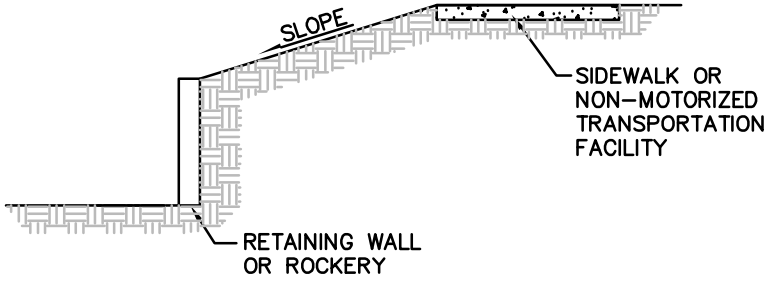
SAFETY RAILING WARRANTED WHEN: DIMENSION "A" ≥ 1 FT

WARRANT 1
FOR DROP OFF AT BACK OF SIDEWALK



SAFETY RAILING WARRANTED WHEN: SLOPE IS STEEPER THAN 2H:1V AND DIMENSION "A" IS ≥ 1 FOOT

WARRANT 2
FOR SLOPE AT BACK OF SIDEWALK



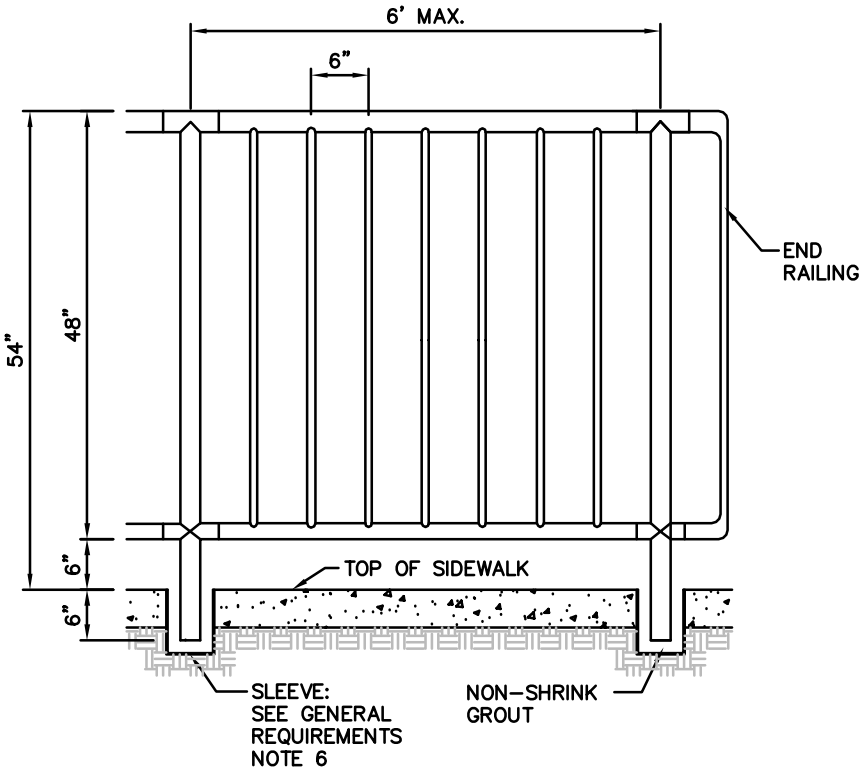
SAFETY RAILING WARRANT TO BE DETERMINED BY THE ENGINEER

WARRANT 3
FOR SLOPE AND WALL DROP OFF
AT BACK OF SIDEWALK

City of Bellevue

SAFETY RAILING INSTALLATION WARRANTS

DRAWING NUMBER	TE-33
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



MATERIAL DIMENSIONS

PANEL HEIGHT	TOP RAIL/POST	BOTTOM RAIL	BALUSTER
48"	2½" NOM.	2" NOM.	⅞"ø BAR
*36"	1½" NOM.	1½" NOM.	⅞"ø BAR

* BEFORE USE SEE GENERAL NOTE 5.

NOTES:

MATERIAL REQUIREMENTS:

1. GALVANIZED STEEL RAILING SHALL BE USED. ALUMINUM MAY BE USED IN DOWNTOWN BELLEVUE.

GENERAL REQUIREMENTS:

1. SHOP DRAWINGS OF RAILING SHALL BE SUBMITTED FOR APPROVAL SHOWING COMPLETE DIMENSIONS AND DETAILS OF FABRICATION AND INCLUDING AN ERECTION DIAGRAM. MATERIALS BEING USED SHALL BE SPECIFIED IN THE SHOP DRAWINGS.
2. PIPE RAILING, PIPE BALUSTERS AND PIPE RAILING SPLICES SHALL BE ADEQUATELY WRAPPED TO ENSURE SURFACE PROTECTION DURING HANDLING AND TRANSPORTATION TO THE JOB SITE.
3. CUTTING SHALL BE DONE BY SAWING OR MILLING AND ALL CUTS SHALL BE TRUE AND SMOOTH. FLAME CUTTING WILL NOT BE PERMITTED.
4. ALLOW FOR EXPANSION AT APPROXIMATELY EVERY FOURTH POST.
5. ONLY USE PANEL HEIGHT OF 36 INCHES AFTER APPROVAL OF THE TRAFFIC ENGINEER.
6. SLEEVES SHALL BE SCHEDULE 40 PVC AND HAVE AN INSIDE DIAMETER 2 INCHES LARGER THAN THE POST OUTSIDE DIAMETER. IF RAILING IS TO BE INSTALLED IN EXISTING SIDEWALK, HOLES SHALL BE CORE DRILLED 2 INCHES LARGER THAN THE OUTSIDE DIAMETER OF THE POST, AND NO LESS THAN 6" FROM THE EDGE OF CONCRETE.
7. AVOID PLACING SAFETY RAIL IN SIGHT LINES. SEE TE-1 THRU 3.

ALUMINUM RAILING REQUIREMENTS:

1. RAILING SHALL BE CV PIPE RAIL OR APPROVED EQUIVALENT. INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS. BALUSTERS SHALL BE SOLID ALUMINUM FULL WELDED IN PLACE.
2. ALL ALUMINUM PARTS SHALL BE GIVEN A CLEAR ANODIC COATING AT LEAST 0.0006 INCH THICK AND BE HOT WATER SEALED AND SHALL HAVE A UNIFORM FINISH.
3. PIPE RAILING AND PIPE RAILING SPLICES MAY BE HEATED TO NOT MORE THAN 400°F FOR A PERIOD NOT TO EXCEED 30 MINUTES TO FACILITATE FORMING OR BENDING.
4. WELDING OF ALUMINUM SHALL BE IN ACCORDANCE WITH THE LATEST AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS.
5. RAILS, POSTS AND FORMED ELBOWS SHALL BE A.S.T.M. B-241 OR B-429 ALLOW 6063-T6 SCHEDULE 40 (STD PIPE). BRACKETS, END CAPS AND OTHER FITTINGS SHALL BE A.S.T.M. 6063-T5. SPLICES AND REINFORCING SLEEVES SHALL BE DRAWN ALUMINUM TUBING 6063-T832. SLEEVE I.D. SHALL BE 1" GREATER THAN POST O.D.

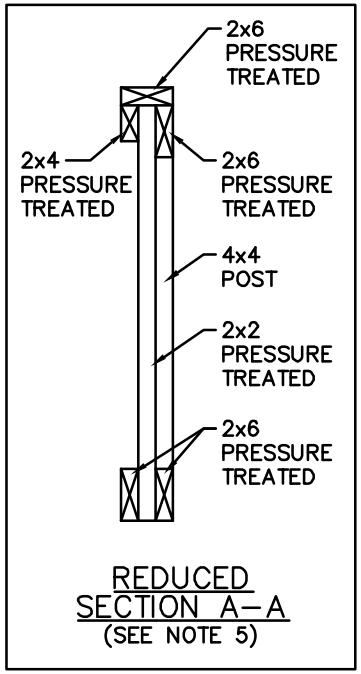
STEEL RAILING REQUIREMENTS:

1. POST AND RAIL MATERIAL SHALL BE SCHEDULE 40 STEEL PIPE CONFORMING TO ASTM A 53, GRADE B. BALUSTERS SHALL BE SOLID STEEL BARS CONFORMING TO AASHTO M 183.
2. SPOT WELDING IS NOT ALLOWED. ALL WELDS SHALL ENCOMPASS THE ENTIRE JOINT.
3. SAFETY RAILING WILL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
4. ANY FIELD CUTTING OR WELDING AREAS SHALL BE GROUND SMOOTH AND COATED WITH AT LEAST 2 COATS OF COLD GALVANIZED PAINT.

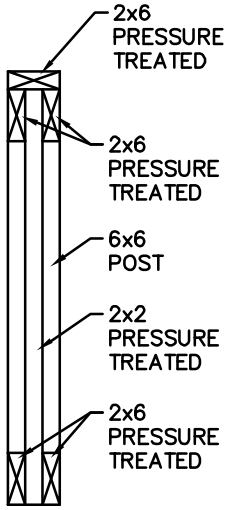
City of Bellevue

METAL SAFETY RAILING

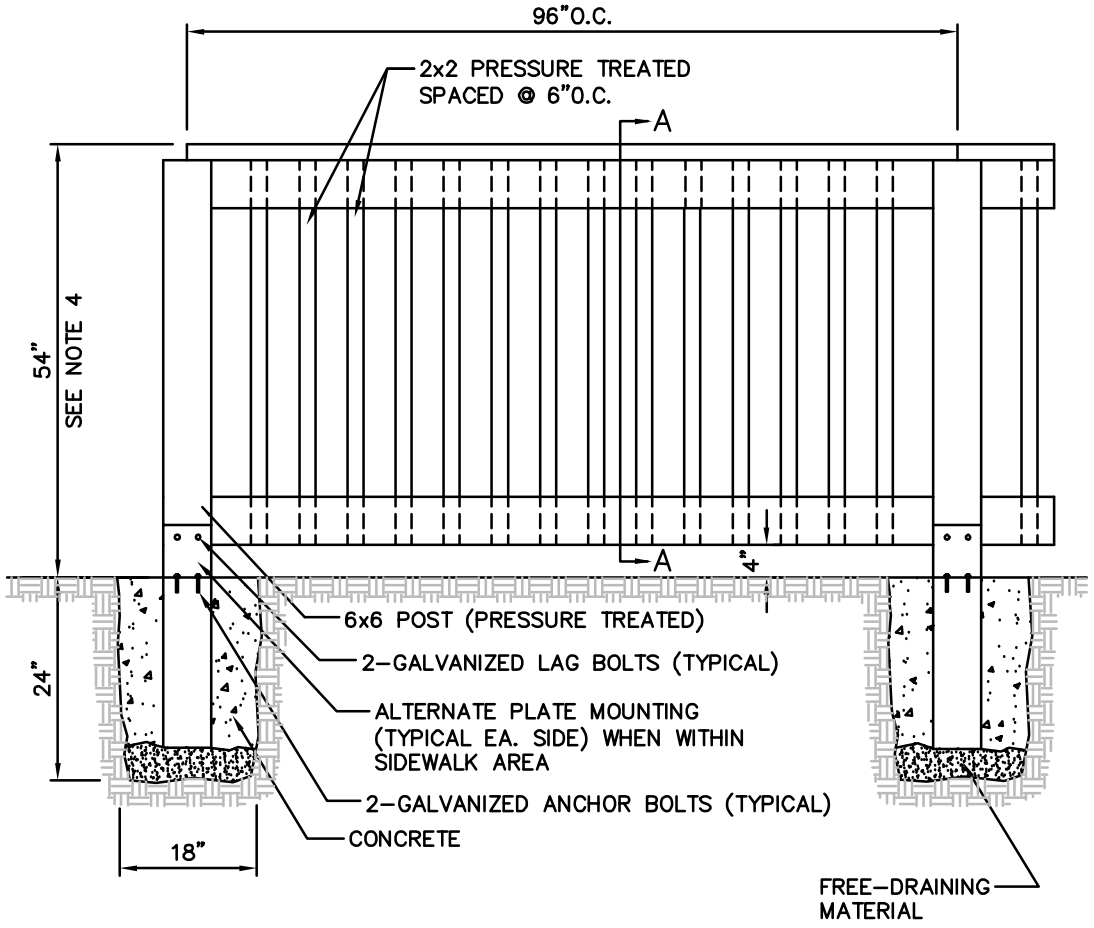
DRAWING NUMBER	TE-34
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS



REDUCED
SECTION A–A
(SEE NOTE 5)



SECTION A–A



ELEVATION VIEW

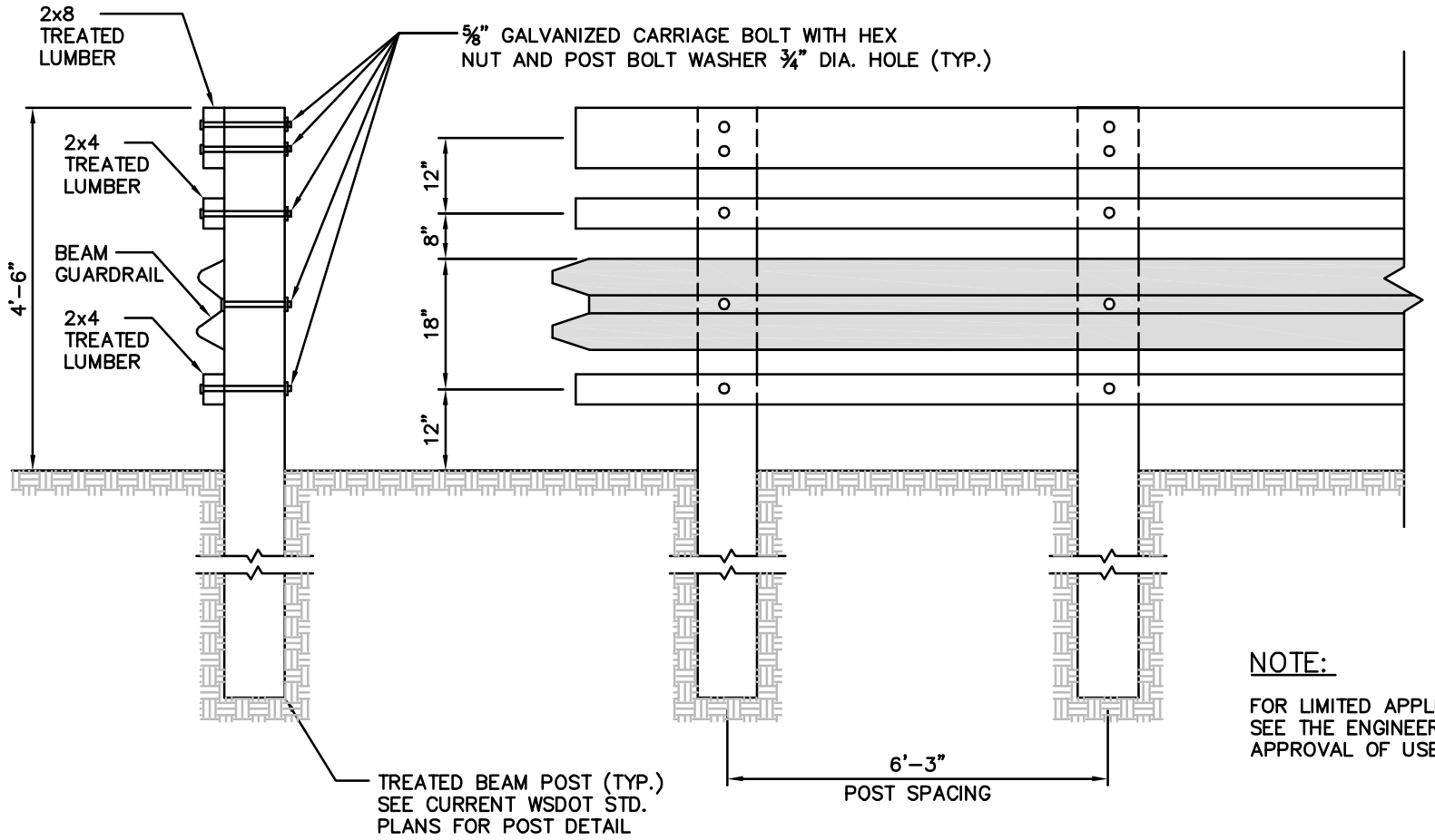
NOTES:

1. USE ON TRAILS OR TO UPGRADE EXISTING WOOD RAILING.
2. FOR NEW INSTALLATIONS IN SIDEWALK, METAL RAILING IS PREFERRED (SEE DWG. TE–34).
3. AVOID PLACING IN SIGHT LINES (SEE DWGS. TE–1,2,&3).
4. 42" HEIGHT MAY BE USED ONLY UPON APPROVAL OF THE ENGINEER.
5. USE REDUCED CROSS SECTION ONLY UPON APPROVAL OF THE ENGINEER.
6. NAILING – TWO NAILS PER JOINT MINIMUM, WITH PENETRATION TO ADEQUATELY SECURE THE JOINT. NAILS MUST BE GALVANIZED.

City of Bellevue

WOOD SAFETY RAILING

DRAWING NUMBER	TE–35
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS



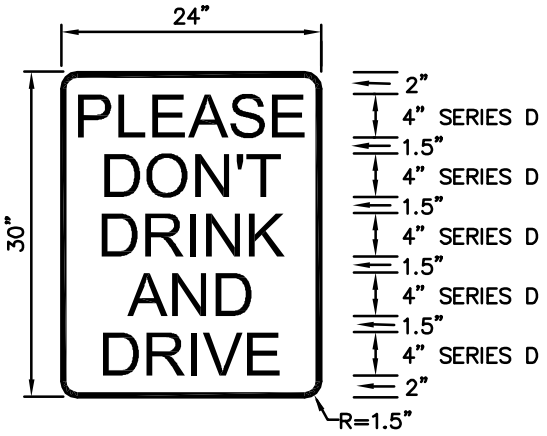
NOTE:

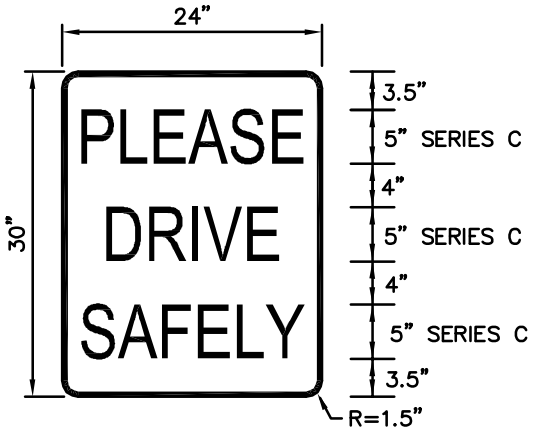
FOR LIMITED APPLICATIONS.
SEE THE ENGINEER FOR
APPROVAL OF USE.

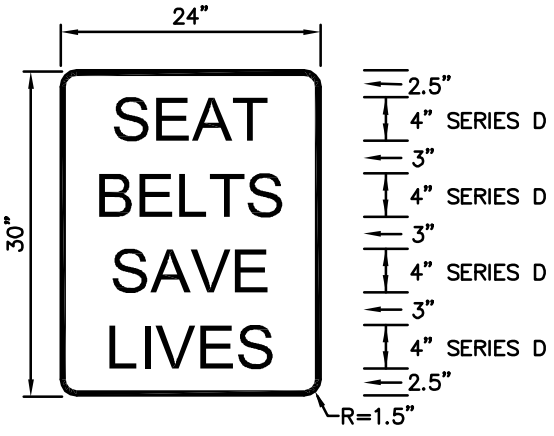
City of Bellevue

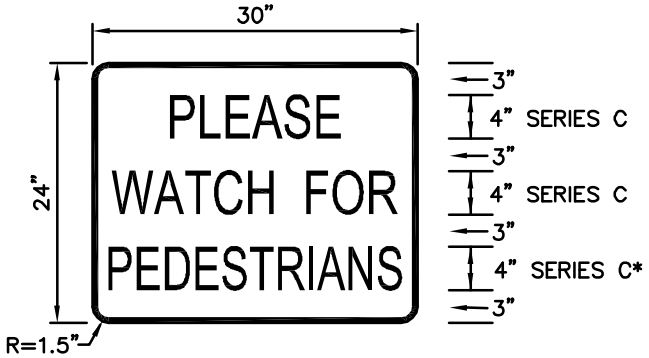
COMBINATION GUARDRAIL & HANDRAIL

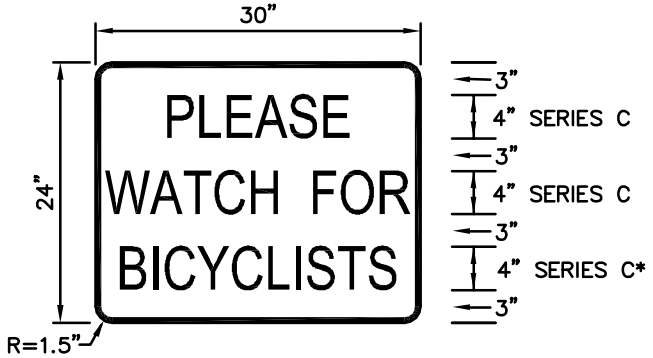
DRAWING NUMBER	TE-36
SCALE	NONE
REVISION DATE	2/06
DEPARTMENT	TRANS











*WIDTH FACTOR = 0.5

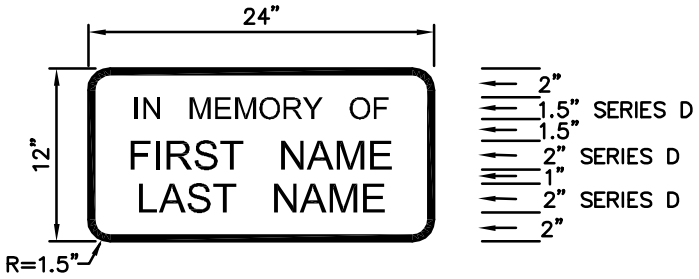
NOTES:

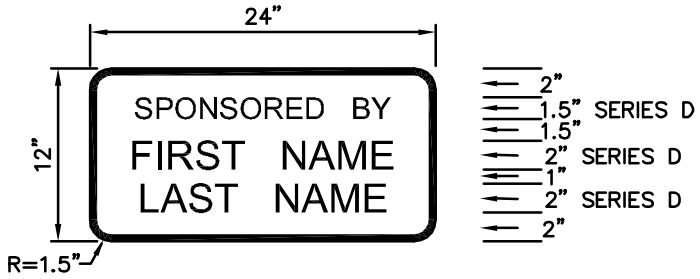
1. USE ½" WHITE BORDER WITH NO MARGIN.
2. USE WHITE LEGEND ON BLUE BACKGROUND.

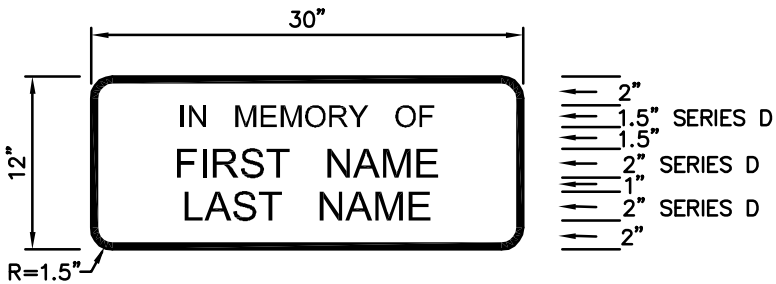
City of Bellevue

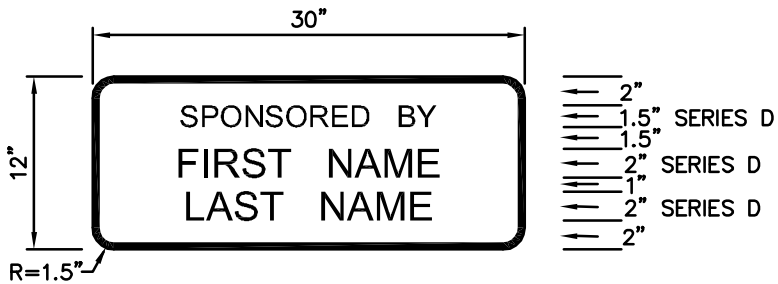
MEMORIAL SIGN LAYOUTS – A

DRAWING NUMBER	TE-37A
SCALE	NONE
REVISION DATE	6/08
DEPARTMENT	TRANS









NOTES:

1. USE ½" WHITE BORDER WITH NO MARGIN.
2. USE WHITE LEGEND ON BLUE BACKGROUND.

City of Bellevue

MEMORIAL SIGN LAYOUTS – B

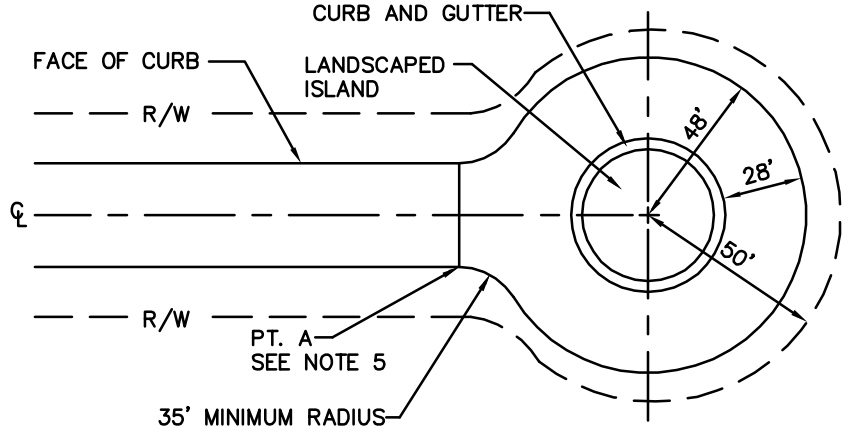
DRAWING NUMBER	TE-37B
SCALE	NONE
REVISION DATE	6/08
DEPARTMENT	TRANS


CITY OF BELLEVUE
WASHINGTON

TRANSPORTATION DESIGN MANUAL

DEV Drawings (Development Review)

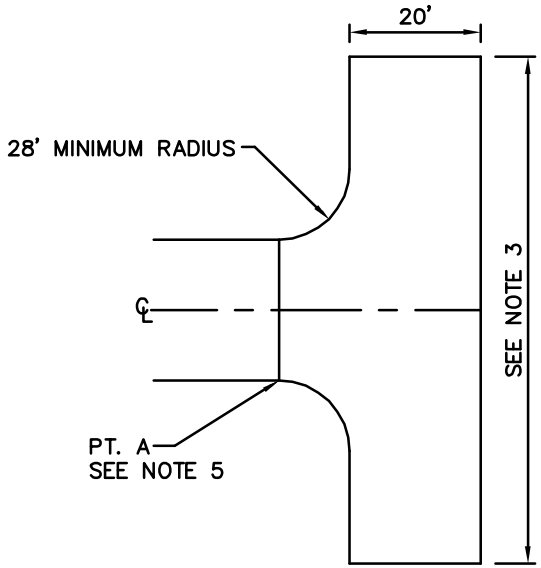

CITY OF BELLEVUE
WASHINGTON



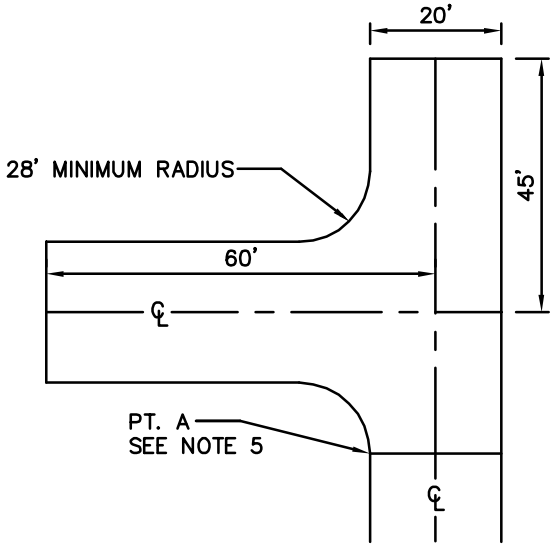
CIRCULAR TURNAROUND

NOTES:

1. LANDSCAPED ISLAND WITH VERTICAL CURB AT CENTER OF CIRCULAR TURNAROUND IS REQUIRED.
2. CIRCULAR TURNAROUNDS SHALL BE PLACED WITHIN A 50' MINIMUM RIGHT-OF-WAY RADIUS. SIDEWALKS AND UTILITIES MAY BE PLACED WITHIN A PUBLIC EASEMENT AT THE DISCRETION OF THE REVIEW ENGINEER.
3. HAMMERHEAD WIDTH MAY RANGE FROM 90' TO 120' DEPENDING UPON ROAD LENGTH.
4. TURNAROUND FACILITIES CANNOT BE LOCATED ON DRIVEWAYS.
5. POINT A (LOCATED AT THE START OF RADIUS) REPRESENTS THE MEASURED END OF THE STREET/ROAD LENGTH AS DESCRIBED IN 14.60.170 (STREET ENDS).
6. ALL STREET ENDS SHALL BE SIGNED PER THE MUTCD.
7. ALTERNATIVE STREET END DESIGNS MAY BE ALLOWED SUBJECT TO REVIEW AND APPROVAL OF THE ENGINEER AND THE FIRE MARSHALL.



HAMMERHEAD



OFFSET HAMMERHEAD

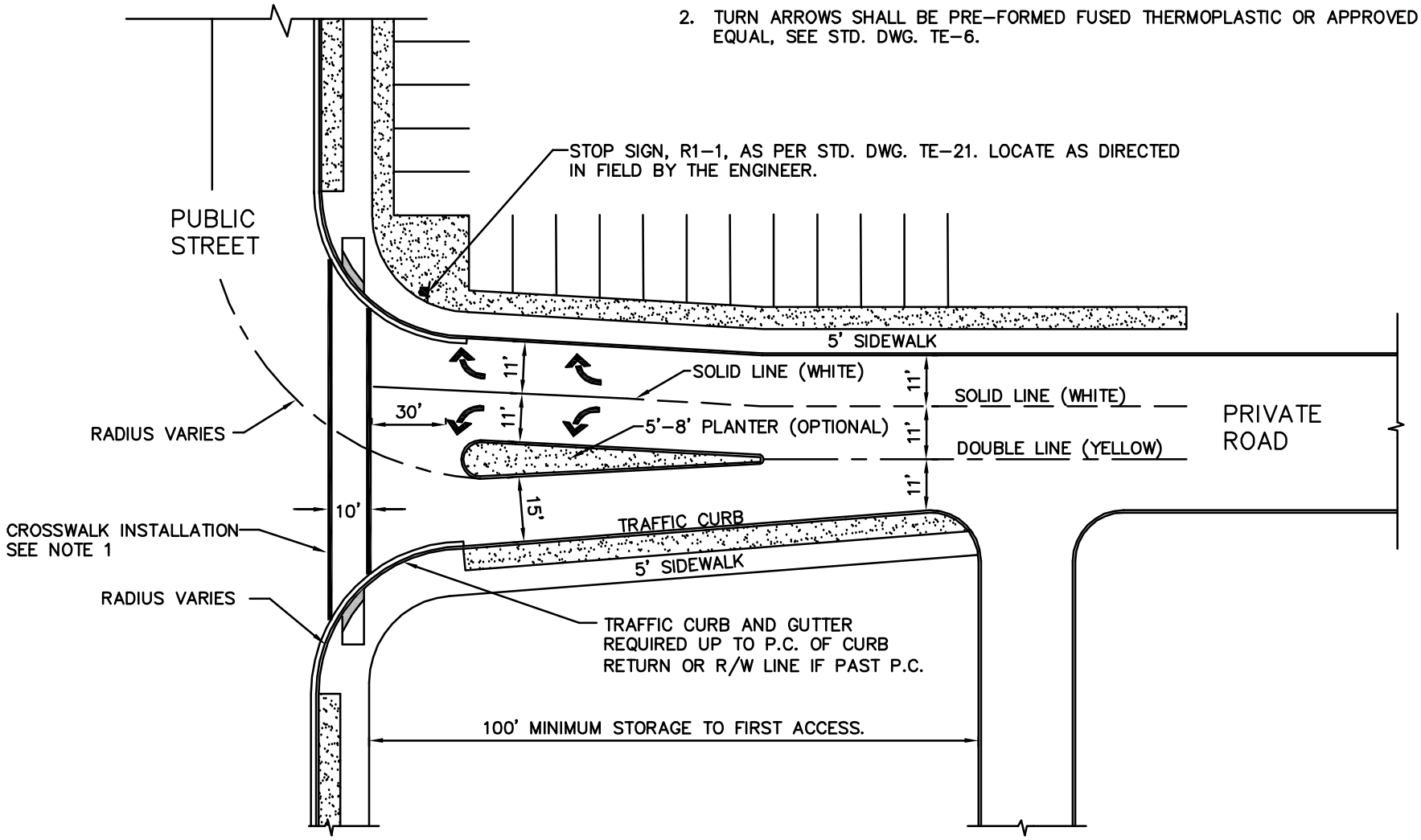
City of Bellevue

TURNAROUND FACILITIES

DRAWING NUMBER	DEV-1
SCALE	NONE
REVISION DATE	2/08
DEPARTMENT	TRANS

NOTES:

1. CROSSWALK SHALL BE HOT APPLIED THERMOPLASTIC OR APPROVED EQUAL, SEE STD. DWG. TE–7A.
2. TURN ARROWS SHALL BE PRE–FORMED FUSED THERMOPLASTIC OR APPROVED EQUAL, SEE STD. DWG. TE–6.



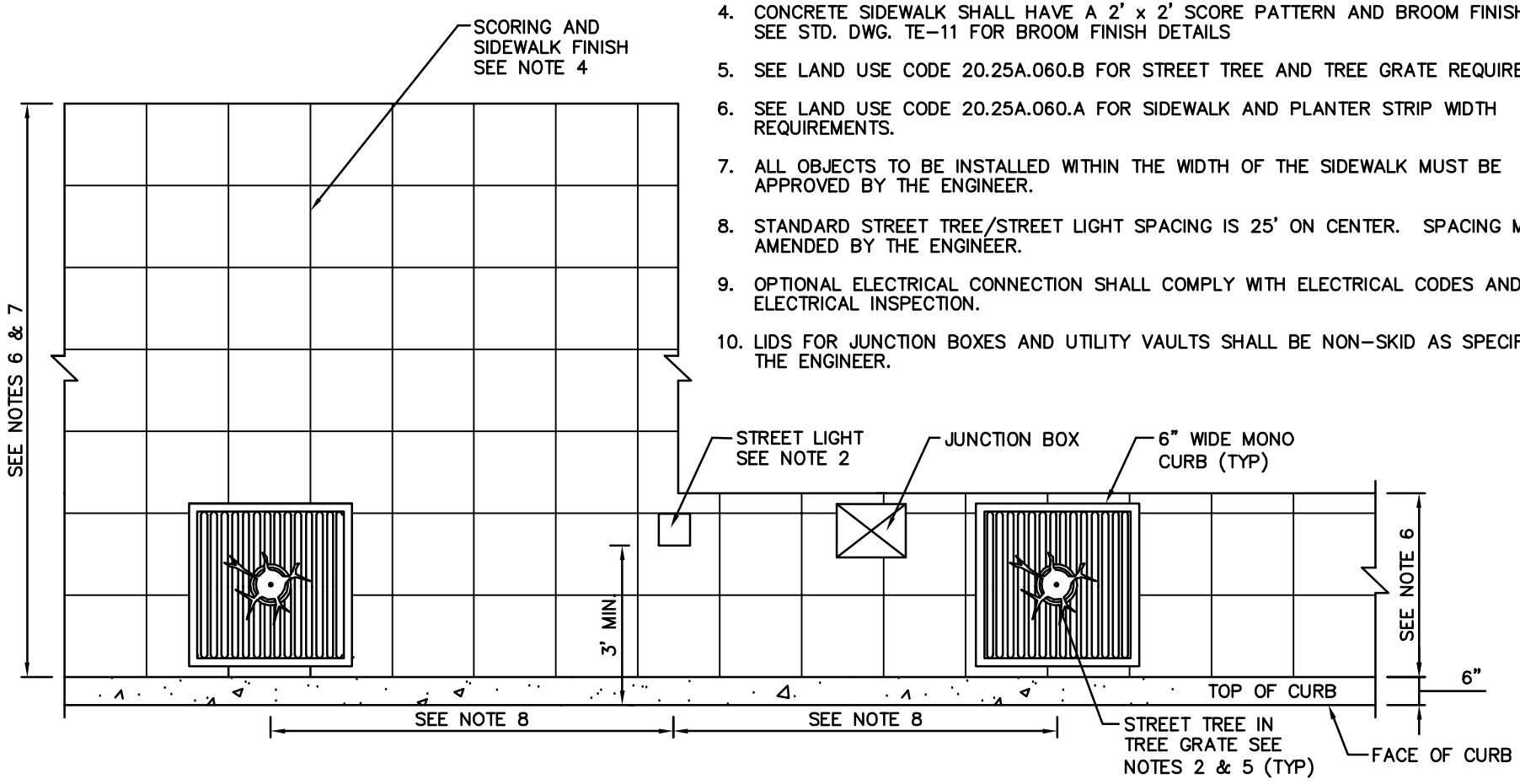
City of Bellevue

PRIVATE COMMERCIAL ROAD/PUBLIC STREET INTERSECTION

DRAWING NUMBER	DEV–2
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

NOTES

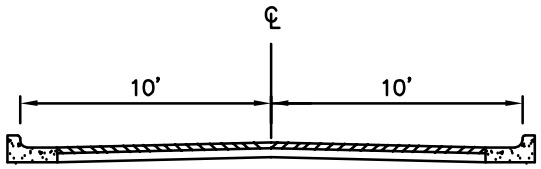
1. VERIFICATION OF UTILITIES BELOW GRADE PRIOR TO INSTALLATION OF ALL FIXED AND BREAKAWAY OBJECTS IS REQUIRED (STREET TREES, STREET LIGHTS, SIGNAL EQUIPMENT, SIGNS, ETC.). RELOCATE UTILITIES WHERE FEASIBLE.
2. SEE DESIGN STANDARDS 15 AND 16 FOR CLEAR DISTANCE REQUIREMENTS BETWEEN FIXED AND BREAKAWAY OBJECTS AND THE FACE OF CURB.
3. PORTLAND CEMENT CONCRETE SHALL BE WSDOT CLASS 3000.
4. CONCRETE SIDEWALK SHALL HAVE A 2' x 2' SCORE PATTERN AND BROOM FINISH ONLY. SEE STD. DWG. TE-11 FOR BROOM FINISH DETAILS
5. SEE LAND USE CODE 20.25A.060.B FOR STREET TREE AND TREE GRATE REQUIREMENTS.
6. SEE LAND USE CODE 20.25A.060.A FOR SIDEWALK AND PLANTER STRIP WIDTH REQUIREMENTS.
7. ALL OBJECTS TO BE INSTALLED WITHIN THE WIDTH OF THE SIDEWALK MUST BE APPROVED BY THE ENGINEER.
8. STANDARD STREET TREE/STREET LIGHT SPACING IS 25' ON CENTER. SPACING MAY BE AMENDED BY THE ENGINEER.
9. OPTIONAL ELECTRICAL CONNECTION SHALL COMPLY WITH ELECTRICAL CODES AND PASS ELECTRICAL INSPECTION.
10. LIDS FOR JUNCTION BOXES AND UTILITY VAULTS SHALL BE NON-SKID AS SPECIFIED BY THE ENGINEER.



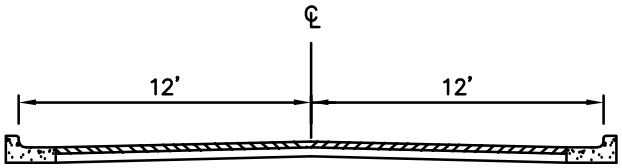
City of Bellevue

DOWNTOWN SIDEWALK

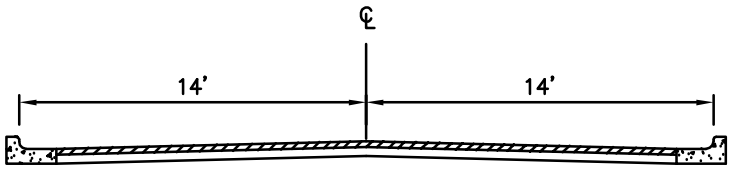
DRAWING NUMBER	DEV-3
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



(A) 20' RESIDENTIAL STREET
NO PARKING



(B) 24' RESIDENTIAL STREET
PARKING ONE SIDE ONLY



(C) 28' RESIDENTIAL STREET
PARKING BOTH SIDES

NOTES

1. ALL STREET WIDTHS SHOWN ARE MINIMUMS. REQUIRED STREET WIDTHS WILL BE SPECIFIED BY THE ENGINEER.

2. WHERE PARKING IS NOT ALLOWED, "NO PARKING ANYTIME" SIGNS ARE REQUIRED.

City of Bellevue

PUBLIC STREET WIDTHS WITHIN SUBDIVISIONS

DRAWING NUMBER	DEV-4
SCALE	NONE
REVISION DATE	3/07
DEPARTMENT	TRANS

DELETED AS OF APRIL 27, 2011

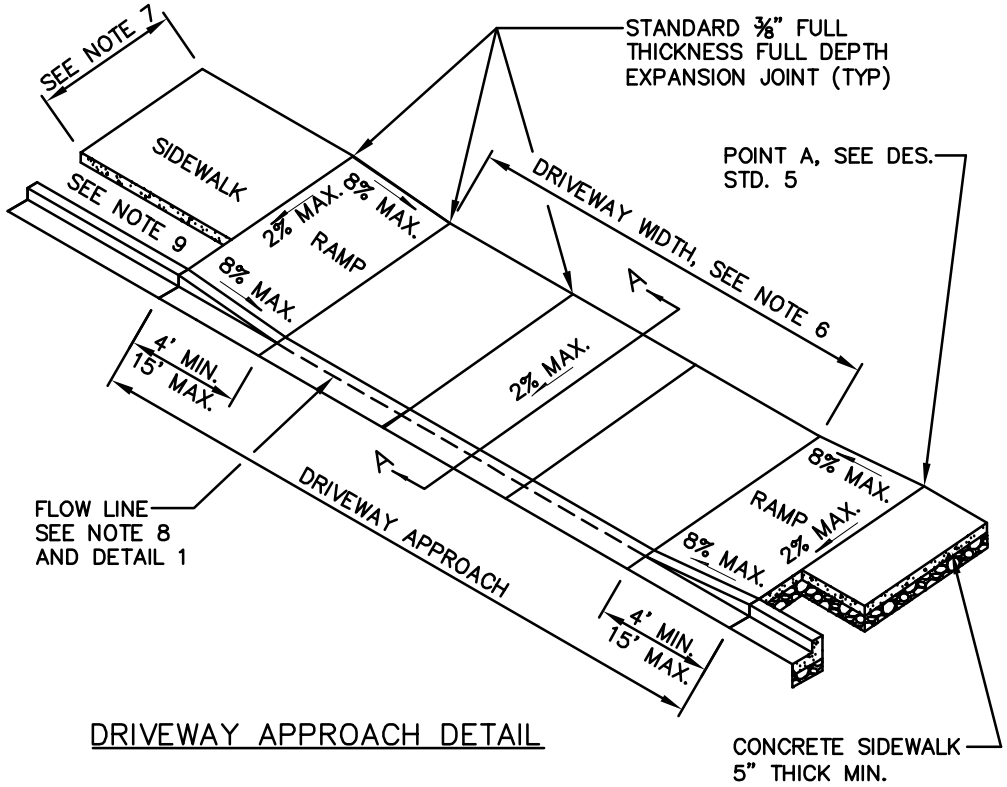
City of Bellevue	COMMERCIAL AND RESIDENTIAL DRIVEWAY APPROACH WITHOUT PLANTER STRIP	DRAWING NUMBER	DEV-5
		SCALE	NONE
		REVISION DATE	3/11
		DEPARTMENT	TRANS

DELETED AS OF APRIL 27, 2011

City of Bellevue

COMMERCIAL DRIVEWAY APPROACH IN DOWNTOWN
OR WITH PLANTER STRIP

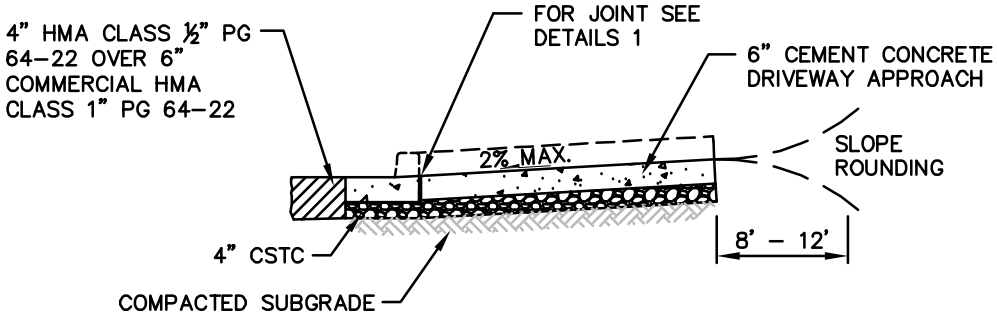
DRAWING NUMBER	DEV-6
SCALE	NONE
REVISION DATE	3/11
DEPARTMENT	TRANS



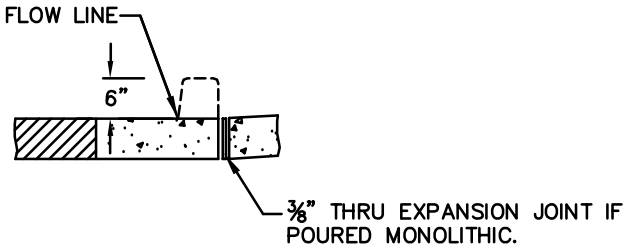
DRIVEWAY APPROACH DETAIL

NOTES

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. MAXIMUM DRIVEWAY GRADE BEHIND DRIVEWAY APPROACH IS 10% FOR 20 FEET. THEREAFTER, DRIVEWAY GRADE SHALL NOT EXCEED 15%. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED TRANSVERSELY WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER.
5. ⅜" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER, SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. SIDEWALK WIDTHS INSTALLED IN DOWNTOWN WILL CONFORM TO L.U.C. 20.25A. REQUIRED SIDEWALK WIDTH WILL BE SPECIFIED BY THE ENGINEER.
8. ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR.
9. PREFERRED PLANTER STRIP WIDTH IS 4 FEET. OMISSION OF THE PLANTER STRIP MUST BE APPROVED BY THE ENGINEER.



SECTION A–A



DETAIL 1

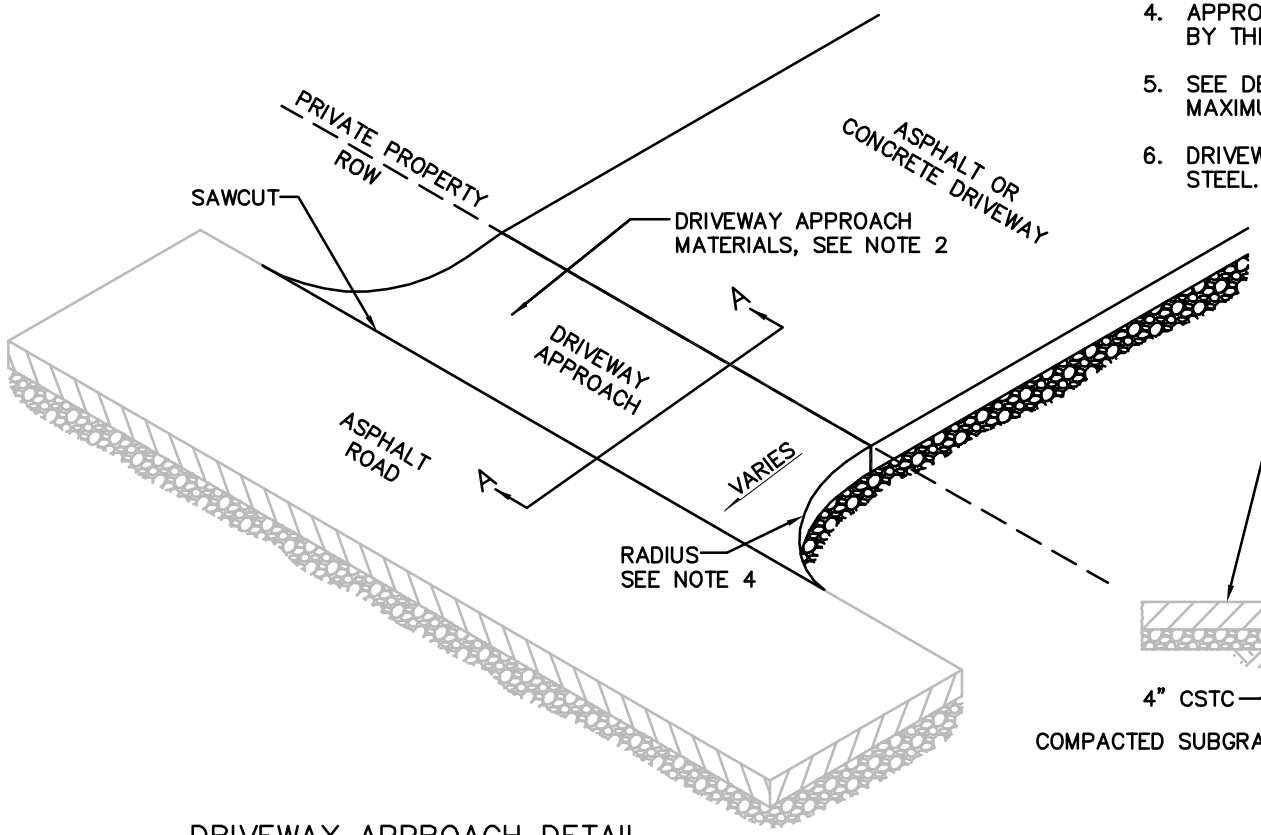
City of Bellevue

DRIVEWAY OR PRIVATE ROAD APPROACH WITH SIDEWALK (DESIGN A)

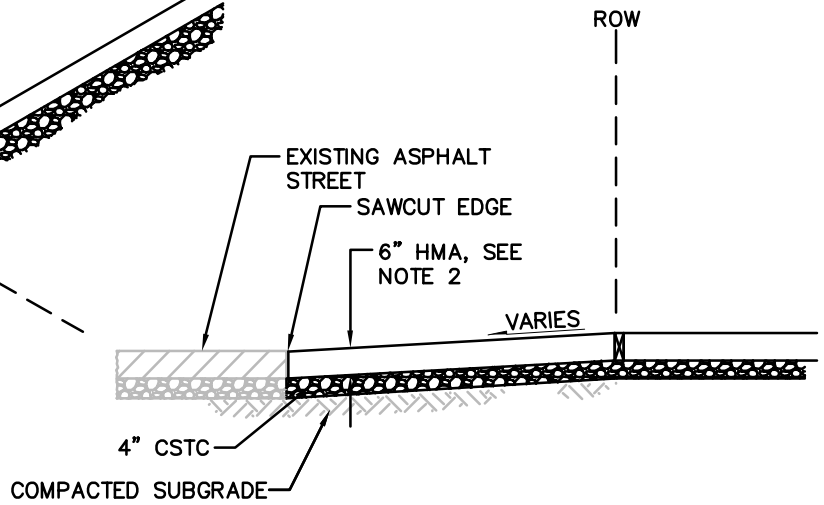
DRAWING NUMBER	DEV–7A
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

NOTES:

1. SAWCUT AND TACK ROAD TO DRIVEWAY APPROACH JOINT.
2. DRIVEWAY APPROACH TO BE 6" HMA CLASS ½" PG 64-22 ASPHALT IN 2" LIFTS.
3. HOT MIX ASPHALT OR CONCRETE TO BE PLACED OVER COMPACTED SUBGRADE AND 4" OF CSTC COMPACTED TO 95%.
4. APPROACH SLOPE AND EDGE RADIUS TO BE DETERMINED BY THE ENGINEER.
5. SEE DESIGN STANDARD 5, TABLE 2 FOR LANDING. MAXIMUM GRADE BEYOND LANDING IS 15%.
6. DRIVEWAY APPROACH SHALL NOT CONTAIN REINFORCING STEEL.



DRIVEWAY APPROACH DETAIL

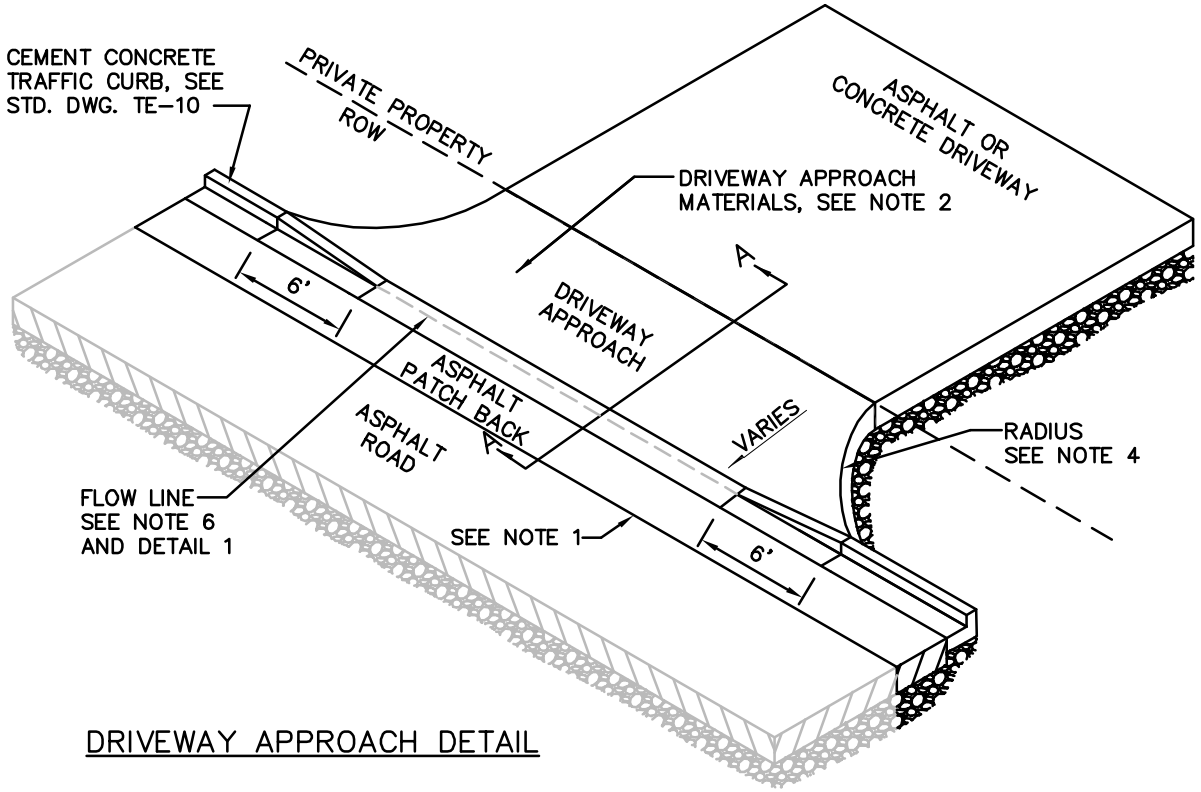


SECTION A-A

City of Bellevue

DRIVEWAY APPROACH
WHERE NO CURB-GUTTER EXISTS

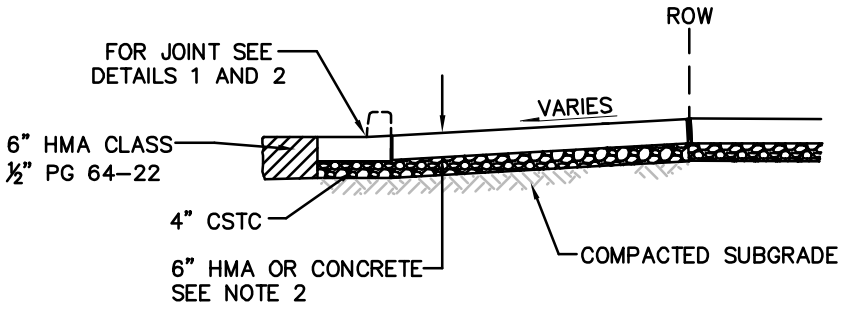
DRAWING NUMBER	DEV-7B
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



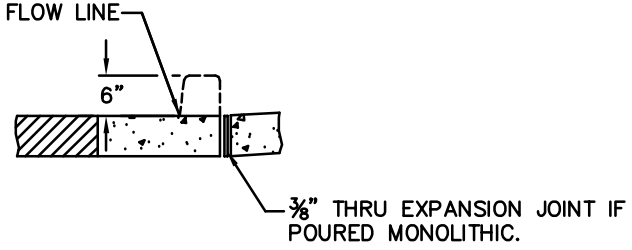
DRIVEWAY APPROACH DETAIL

NOTES:

1. SAWCUT AND SEAL JOINT WITH ASPHALT OIL.
2. DRIVEWAY APPROACH TO BE 6" HMA CLASS ½" PG 64-22 ASPHALT IN 2" LIFTS OR 6" OF CLASS 4000 P.C.C. MIX WITH COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS, FROM ROAD TO PROPERTY LINE. MATERIAL TO BE DETERMINED BY THE ENGINEER.
3. HOT MIX ASPHALT OR CONCRETE TO BE PLACED OVER COMPACTED SUBGRADE AND 4" OF CSTC COMPACTED TO 95%.
4. APPROACH SLOPE AND EDGE RADIUS TO BE DETERMINED BY THE ENGINEER.
5. ALL CURB AND GUTTER AND DRIVEWAY APPROACHES SHALL BE CLASS 4000 P.C.C. WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS.
6. ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR.
7. SEE DESIGN STANDARD 5, TABLE 2 FOR LANDING. MAXIMUM GRADE BEYOND LANDING IS 15%.



SECTION A-A

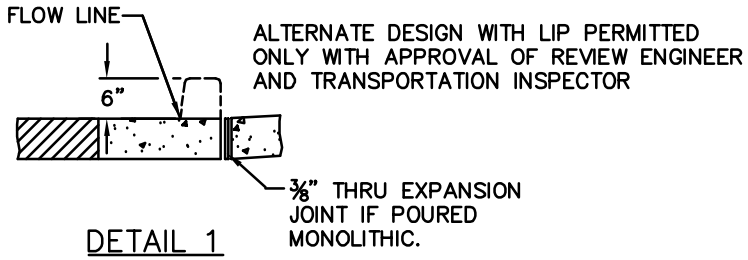


DETAIL 1

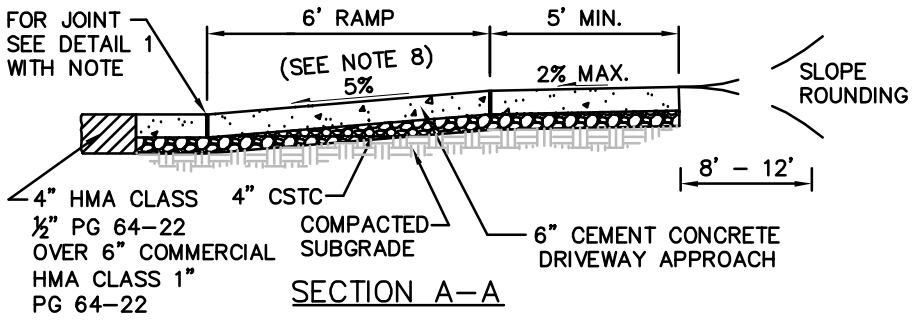
City of Bellevue

DRIVEWAY APPROACH
WHERE CURB-GUTTER EXISTS (NO SIDEWALK)

DRAWING NUMBER	DEV-7C
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



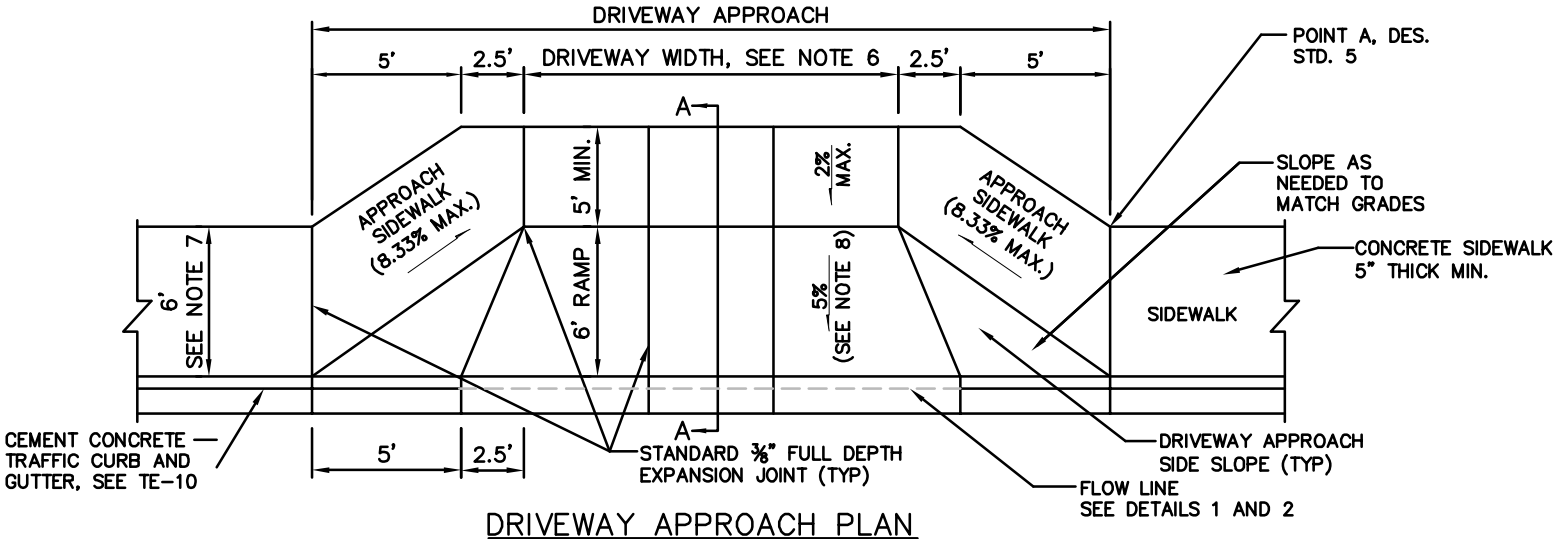
DETAIL 1



SECTION A–A

NOTES

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. MAXIMUM DRIVEWAY GRADE BEHIND DRIVEWAY APPROACH IS 10% FOR 20 FEET. THEREAFTER, DRIVEWAY GRADE SHALL NOT EXCEED 15%. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED TRANSVERSELY WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER.
5. ⅜" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER. SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. SIDEWALK WIDTH SHOWN IS TYPICAL. REQUIRED SIDEWALK WIDTH WILL BE SPECIFIED BY THE ENGINEER.
8. RAMP SLOPE MAY BE INCREASED TO 8.33% MAXIMUM WITH APPROVAL BY THE REVIEW ENGINEER.

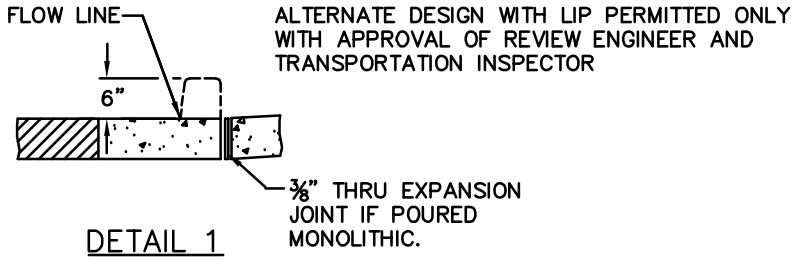


DRIVEWAY APPROACH PLAN

City of Bellevue

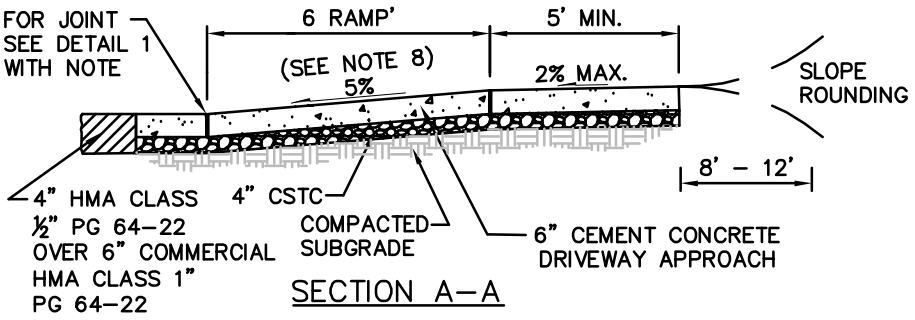
DRIVEWAY OR PRIVATE ROAD APPROACH WITH SIDEWALK (DESIGN B)

DRAWING NUMBER	DEV-7D
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR

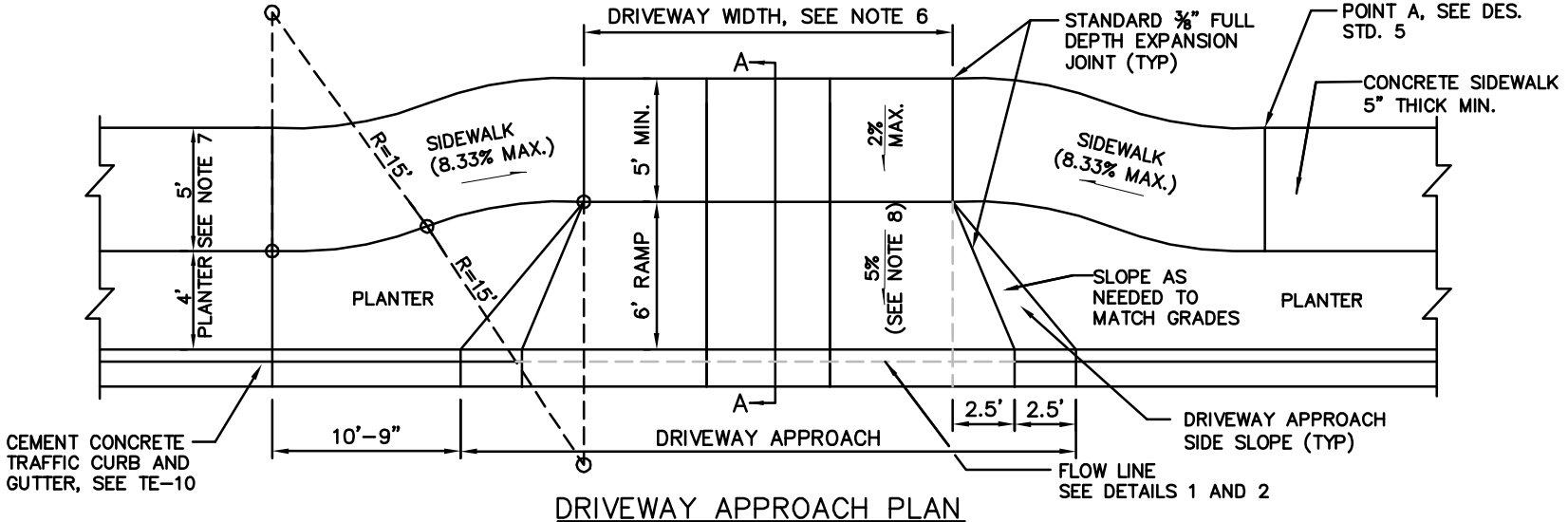
DETAIL 1



SECTION A–A

NOTES

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. MAXIMUM DRIVEWAY GRADE BEHIND DRIVEWAY APPROACH IS 10% FOR 20 FEET. THEREAFTER, DRIVEWAY GRADE SHALL NOT EXCEED 15%. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED TRANSVERSELY WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER.
5. ⅜" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER. SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. SIDEWALK WIDTH SHOWN IS TYPICAL. REQUIRED SIDEWALK WIDTH WILL BE SPECIFIED BY THE ENGINEER.
8. RAMP SLOPE MAY BE INCREASED TO 8.33% MAXIMUM WITH APPROVAL BY THE REVIEW ENGINEER.

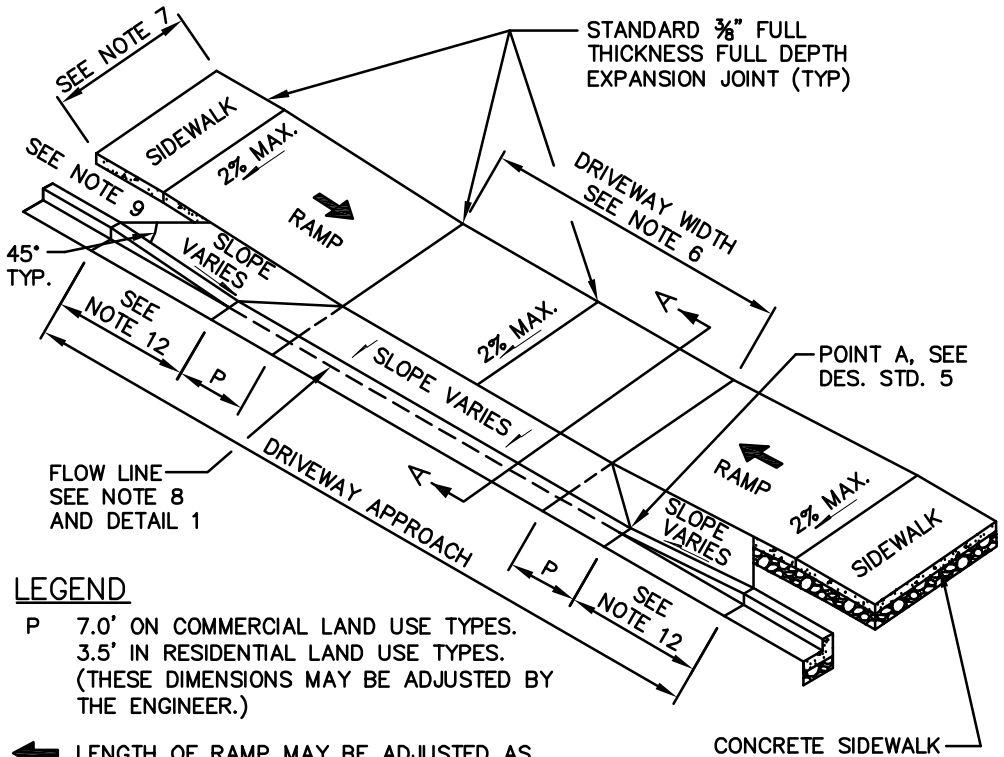


DRIVEWAY APPROACH PLAN

City of Bellevue

DRIVEWAY OR PRIVATE ROAD APPROACH WITH SIDEWALK (DESIGN C)

DRAWING NUMBER	DEV-7E
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



LEGEND

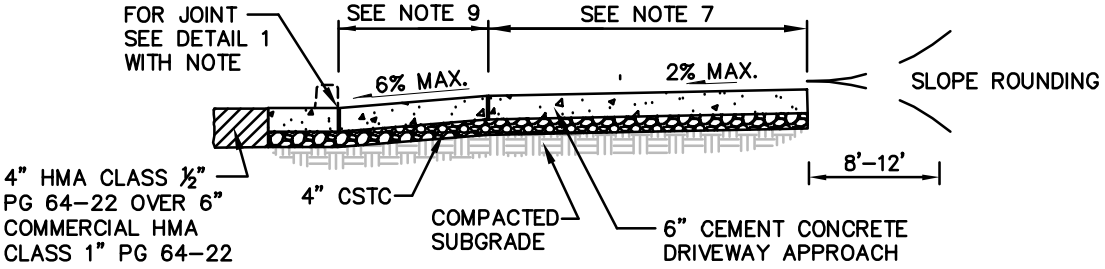
P 7.0' ON COMMERCIAL LAND USE TYPES. 3.5' IN RESIDENTIAL LAND USE TYPES. (THESE DIMENSIONS MAY BE ADJUSTED BY THE ENGINEER.)

← LENGTH OF RAMP MAY BE ADJUSTED AS NEEDED TO OBTAIN AN 8.33% MAXIMUM SLOPE. LENGTH NOT TO EXCEED 15'.

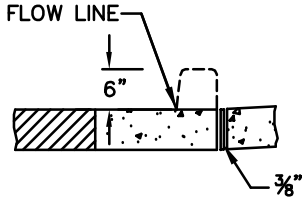
NOTES

1. ALL JOINTS SHALL BE CLEANED AND EDGED.
2. MAXIMUM DRIVEWAY GRADE BEHIND DRIVEWAY APPROACH IS 10% FOR 20 FEET. THEREAFTER, DRIVEWAY GRADE SHALL NOT EXCEED 15%. SLOPE ROUNDING IS REQUIRED AT DRIVEWAY GRADE TRANSITIONS AS SHOWN IN SECTION A–A.
3. CONCRETE SHALL BE A CLASS 4000 P.C.C. MIX WITH A COMPRESSIVE STRENGTH OF 3000 PSI WITHIN 3 DAYS (CURB, GUTTER, DRIVEWAY APPROACH, RAMPS AND ALL OTHER ITEMS SPECIFIED BY THE ENGINEER).
4. CONCRETE PAVEMENT SHALL BE BRUSHED TRANSVERSELY WITH A FIBER OR WIRE BRUSH OF A TYPE APPROVED BY THE ENGINEER.
5. ⅜" THRU EXPANSION JOINTS SHALL BE PLACED AT BACK, SIDES AND FRONT. MAXIMUM EXPANSION JOINT SPACING IS 14' CENTER TO CENTER.
6. DRIVEWAY WIDTHS SHALL BE SPECIFIED BY THE ENGINEER, SEE DES. STD. 5 FOR BASIC DESIGN GUIDELINES. DRIVEWAY WIDTH DOES NOT INCLUDE ADJACENT RAMPS.
7. SIDEWALK WIDTHS INSTALLED IN DOWNTOWN WILL CONFORM TO L.U.C. 20.25A. REQUIRED SIDEWALK WIDTH WILL BE SPECIFIED BY THE ENGINEER.
8. ALTERNATE DESIGN WITH LIP PERMITTED ONLY WITH APPROVAL OF REVIEW ENGINEER AND TRANSPORTATION INSPECTOR.
9. PREFERRED PLANTER STRIP WIDTH IS 4 FEET. OMISSION OF THE PLANTER STRIP MUST BE APPROVED BY THE ENGINEER.
10. ALL SOFT AREA BEHIND SIDEWALK SHALL BE GRADED TO MATCH SIDEWALK PROFILE TO PREVENT TRIPPING HAZARDS.
11. INSTALL TOOLED JOINTS AT ALL DRIVEWAY SLOPE BREAK LINES.
12. TYPICAL LENGTH IS 7 FEET. RAMP LENGTH MAY BE ADJUSTED AS NEEDED.

DRIVEWAY APPROACH DETAIL



SECTION A–A

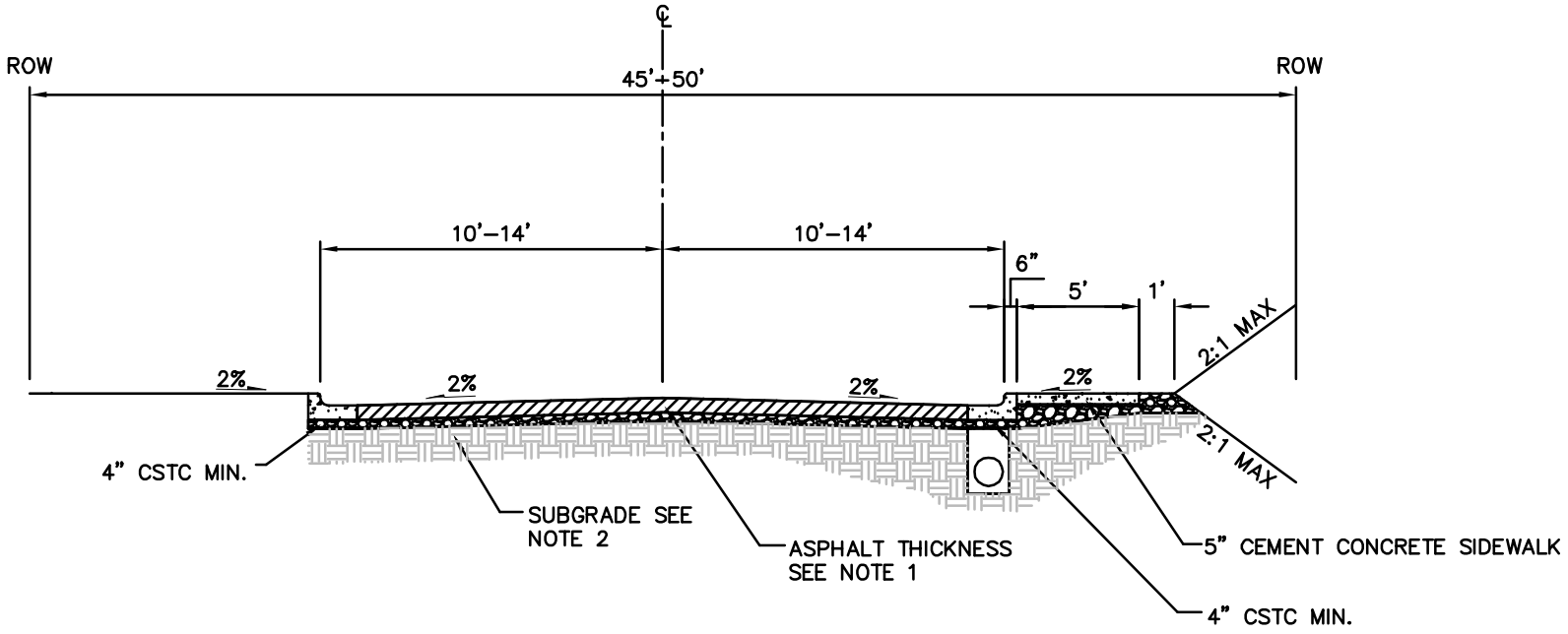


DETAIL 1

City of Bellevue

DRIVEWAY OR PRIVATE ROAD APPROACH WITH SIDEWALK (DESIGN D)

DRAWING NUMBER	DEV–7F
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



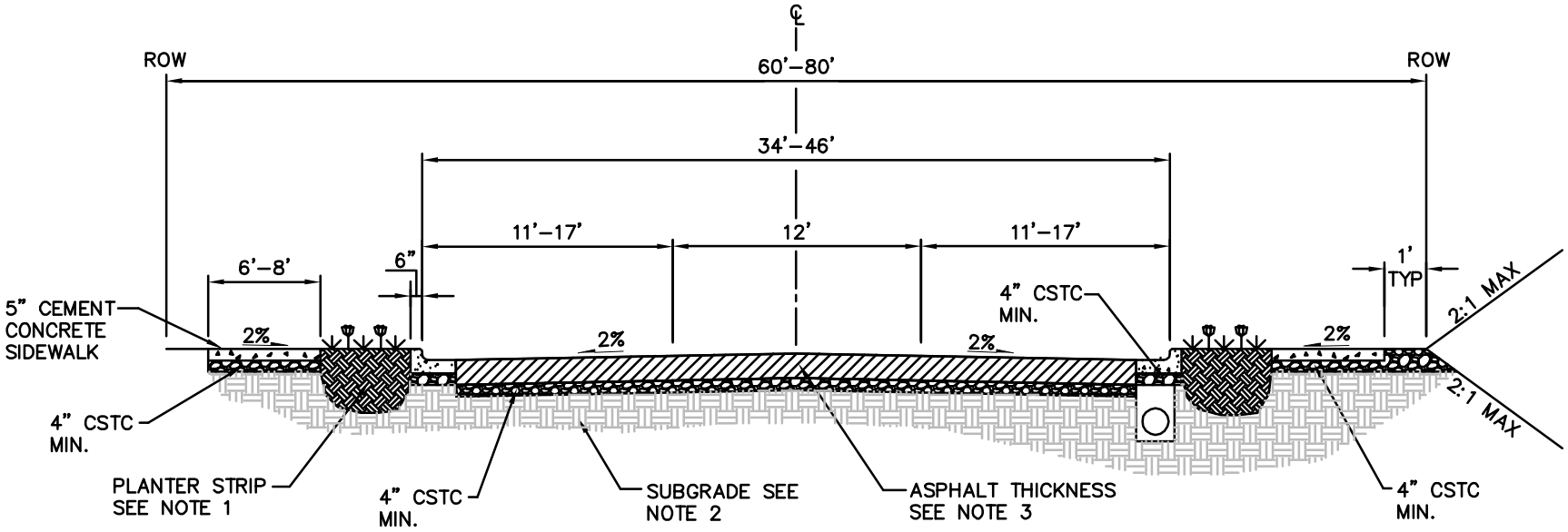
NOTES

1. MINIMUM PAVEMENT THICKNESS SHALL BE 2 INCHES OF HOT MIX ASPHALT CLASS ½" PG 64-22 OVER 4 INCHES OF HOT MIX ASPHALT CLASS ½" OR 1" PG 64-22. IF REQUIRED, ADDITIONAL PAVEMENT THICKNESS WILL BE SPECIFIED BY THE ENGINEER.
2. REQUIRED SUBGRADE MATERIALS (GRAVEL BORROW, ETC.) AND THICKNESS WILL BE SPECIFIED BY THE ENGINEER BASED ON VERIFIED SOIL CONDITIONS.
3. SIDEWALK AT DRIVEWAY/PRIVATE ROAD APPROACHES SHALL BE 6 INCHES THICK.
4. RIGHT-OF-WAY, PAVEMENT AND SIDEWALK WIDTHS SHOWN ARE TYPICAL RANGES. REQUIRED WIDTHS WILL BE SPECIFIED BY THE ENGINEER.
5. ONE FOOT SETBACK DISTANCE REQUIRED FROM ALL SLOPED AREAS AS SHOWN.
6. PLANTER STRIP MAY BE REQUIRED BETWEEN THE CURB AND SIDEWALK AT THE DISCRETION OF THE ENGINEER.

City of Bellevue

PUBLIC STREETS INTERNAL TO SUBDIVISIONS

DRAWING NUMBER	DEV-8
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



NOTES

1. LANDSCAPED PLANTER STRIP REQUIREMENTS (WIDTH, LANDSCAPE TYPE, MAINTENANCE, ETC.) WILL BE SPECIFIED BY THE ENGINEER. SEE STD. DWG. ROW–9 FOR ASPHALT DETAIL ADJACENT TO PLANTER STRIP.

2. REQUIRED SUBGRADE MATERIALS (GRAVEL BORROW, ETC.) AND THICKNESS WILL BE SPECIFIED BY THE ENGINEER. A GEOTECHNICAL REPORT/SOIL ANALYSIS MAY BE REQUIRED.

3. MINIMUM PAVEMENT THICKNESS SHALL BE 10 INCHES OF HOT MIX ASPHALT PLACED IN THE FOLLOWING COURSES TO CONFORM TO WSDOT STANDARD SPECIFICATION 5–04.3(9): 2 INCHES OF HOT MIX ASPHALT CLASS ½" PG 64–22 WEARING COURSE, OVER TWO 4 INCH LIFTS OF HOT MIX ASPHALT CLASS ½" OR 1" PG 64–22. A GEOTECHNICAL REPORT/SOIL ANALYSIS MAY BE REQUIRED BY THE ENGINEER, AND ADDITIONAL PAVEMENT THICKNESS MAY BE REQUIRED.

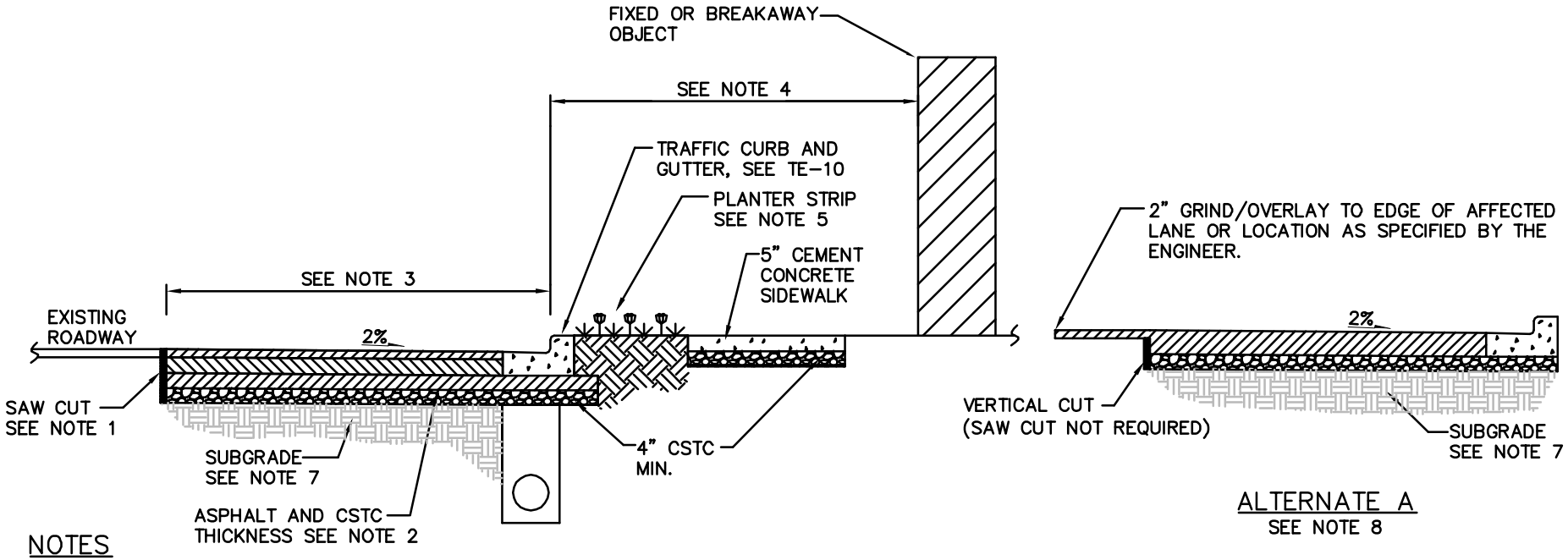
4. RIGHT–OF–WAY, SIDEWALK AND TRAVEL LANE WIDTHS SHOWN ARE TYPICAL RANGES. REQUIRED WIDTHS WILL BE SPECIFIED BY THE ENGINEER.

5. ONE FOOT SETBACK DISTANCE REQUIRED FROM ALL SLOPED AREAS AS SHOWN.

City of Bellevue

TYPICAL PUBLIC STREET

DRAWING NUMBER	DEV–9
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



ALTERNATE A
SEE NOTE 8

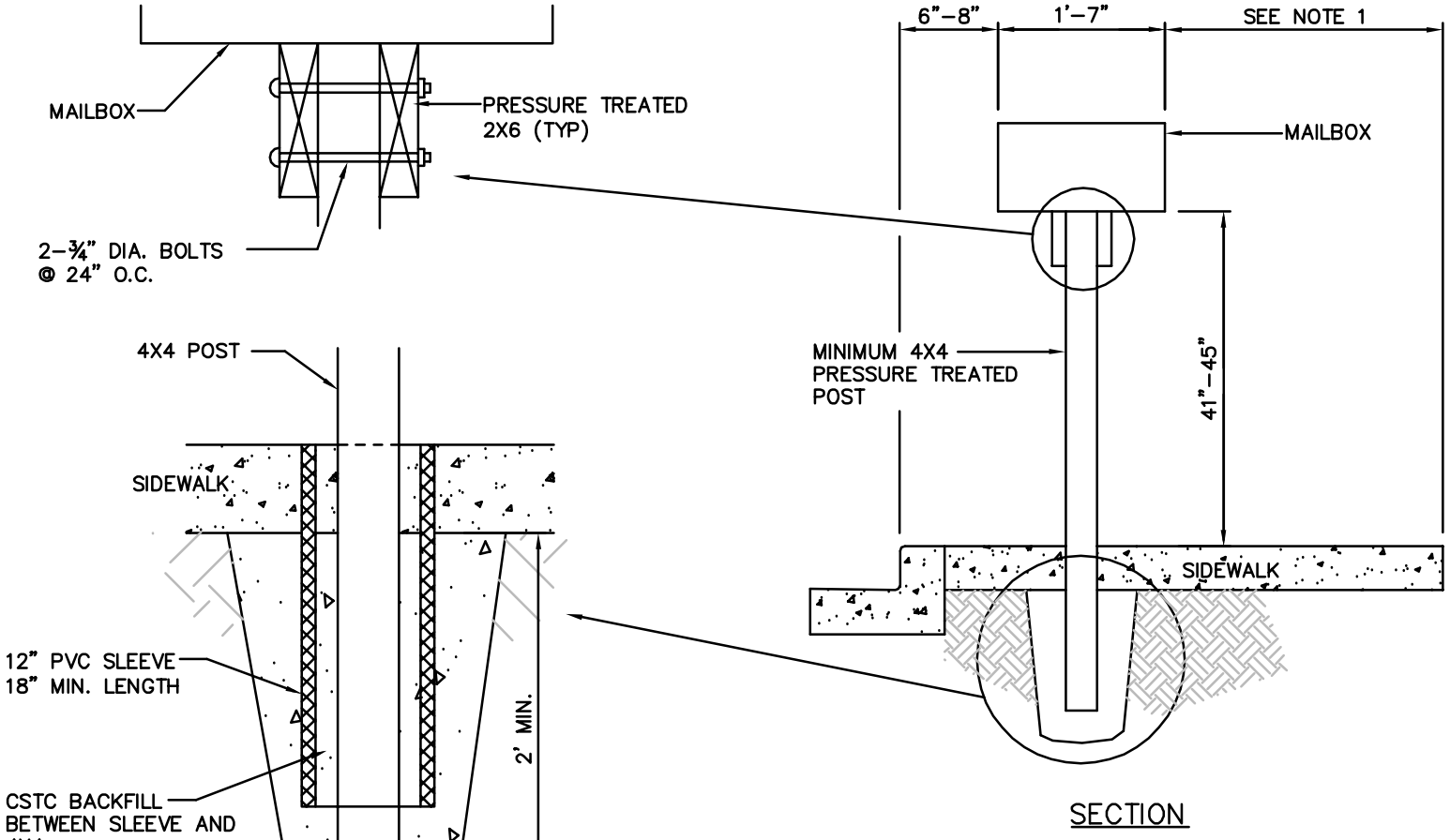
NOTES

1. SAW CUT TO REMOVE IRREGULARITIES. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES AS DIRECTED BY THE ENGINEER. SEAL ALL SAW CUTS WITH CSS-1. TACK FACES OF ALL SAW CUTS.
2. PAVEMENT AND CSTC THICKNESS WILL BE SPECIFIED BY THE REVIEW ENGINEER. SEE STD. DWGS. DEV-8 AND DEV-9 FOR MINIMUM THICKNESS REQUIREMENTS. A GEOTECHNICAL REPORT/SOIL ANALYSIS MAY BE REQUIRED.
3. PAVEMENT WIDENING TO FACILITATE STREET FRONTAGE IMPROVEMENTS MAY BE REQUIRED. REQUIRED WIDTH WILL BE SPECIFIED BY THE ENGINEER.
4. SEE DEVELOPMENT STANDARDS 15 AND 16 FOR REQUIRED CLEARANCE BETWEEN FIXED AND BREAKAWAY OBJECTS AND THE FACE OF CURB.
5. LANDSCAPED PLANTER STRIP REQUIREMENTS (WIDTH, LANDSCAPE TYPE, MAINTENANCE. ETC.) WILL BE SPECIFIED BY THE ENGINEER. SEE STD. DWG. ROW-9 FOR ASPHALT DETAIL ADJACENT TO PLANTER STRIP.
6. NO UTILITIES SHALL BE LOCATED BELOW THE SIDEWALK (UNLESS NO OTHER ALTERNATIVE EXISTS).
7. REQUIRED SUBGRADE MATERIALS AND THICKNESS WILL BE SPECIFIED BY THE ENGINEER. AT A MINIMUM, SUBGRADE SHOULD MATCH SUBGRADE OF EXISTING ROADWAY.
8. AT THE DISCRETION OF THE ENGINEER, ALTERNATE "A" WILL BE ALLOWED OR MAY BE REQUIRED. ALTERNATE "A" MODIFIES STREET CUT METHOD ONLY. NO CHANGES IN MATERIALS OR PAVEMENT AND SUBGRADE THICKNESS ARE ALLOWED WITH THE USE OF ALTERNATE "A".

City of Bellevue

COMMERCIAL PROJECT SITE-STREET FRONTAGE IMPROVEMENTS

DRAWING NUMBER	DEV-10
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



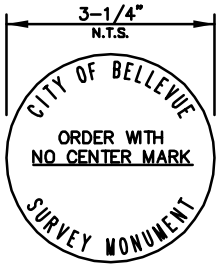
NOTES

1. MEANDER SIDEWALK AROUND MAILBOX TO MAINTAIN FULL WIDTH OF SIDEWALK.
2. COORDINATE LOCATION OF MAILBOX WITH LOCAL POSTMASTER.
3. SECURED MAILBOXES RECOMMENDED FOR MAJOR RESIDENTIAL DEVELOPMENTS.

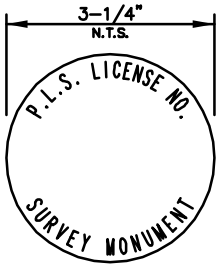
City of Bellevue

MAILBOX STAND

DRAWING NUMBER	DEV–11
SCALE	NONE
REVISION DATE	12/05
DEPARTMENT	TRANS



CAP DETAIL A
CAP LAYOUT FOR
COB CAPITAL PROJECTS

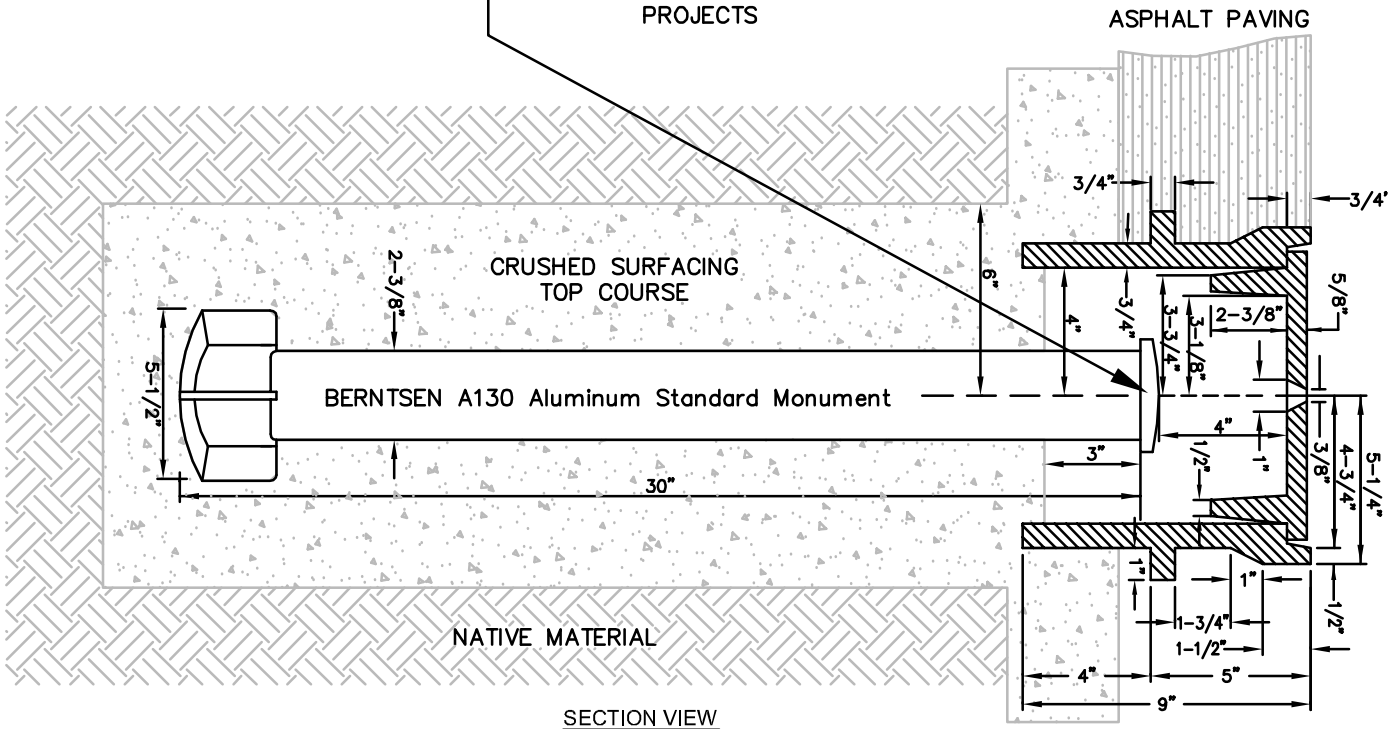


CAP DETAIL B
CAP LAYOUT FOR
PRIVATE DEVELOPMENT
PROJECTS

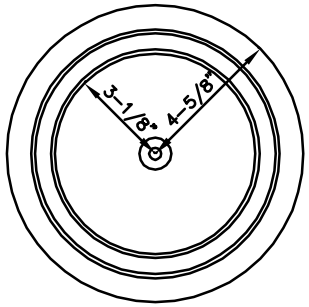
NOTES:

1. THE CASTING MATERIAL SHALL CONFORM TO ASTM–A48, CLASS 30. THE COVER AND SEAT SHALL BE MACHINED SO AS TO HAVE PERFECT CONTACT AROUND THE ENTIRE CIRCUMFERENCE AND FULL WIDTH OF BEARING SURFACE.

APPROXIMATE WEIGHTS STANDARD
CASE 60 LBS
COVER 20 LBS
TOTAL 80 LBS



SECTION VIEW
MONUMENT & CASE

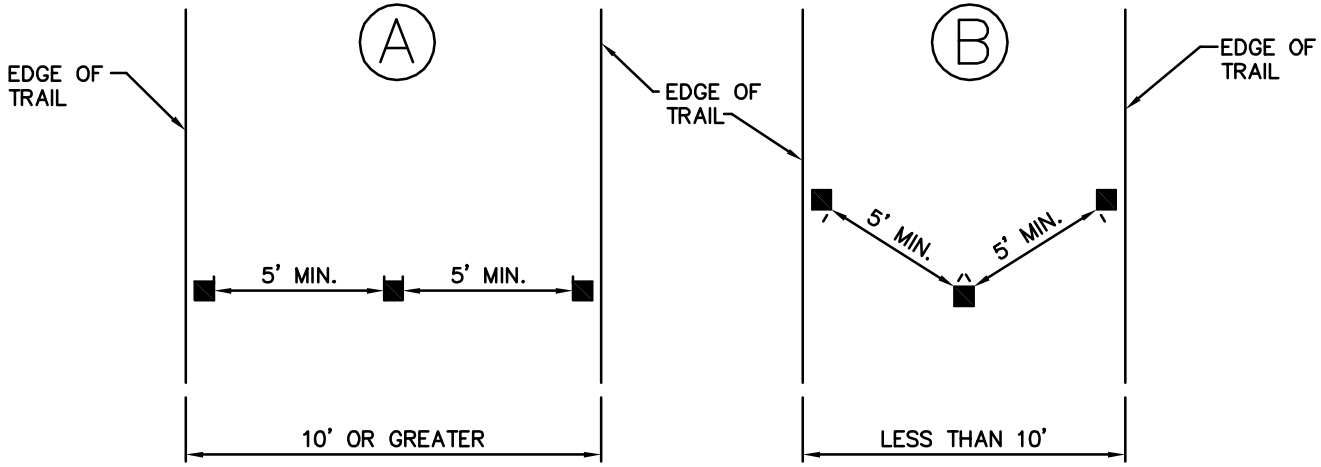


PLAN VIEW
COVER

City of Bellevue

PIPE MONUMENT, CASE AND COVER

DRAWING NUMBER	DEV–12
SCALE	NONE
REVISION DATE	1/09
DEPARTMENT	TRANS

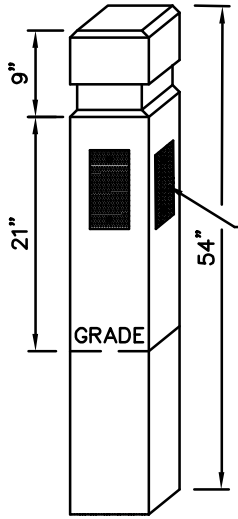


BOLLARD PLACEMENT

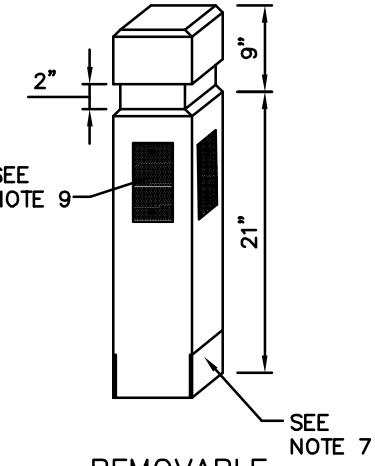
City of Bellevue

TYPICAL BOLLARD PLACEMENT ON PATHWAYS

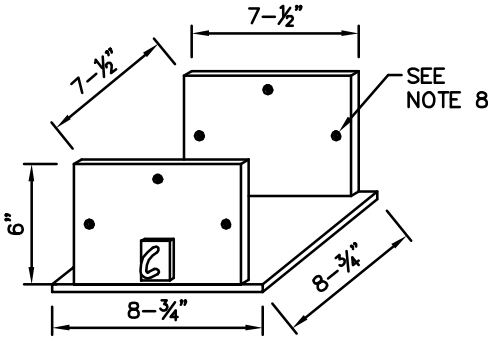
DRAWING NUMBER	DEV-13
SCALE	NONE
REVISION DATE	12/05
DEPARTMENT	TRANS



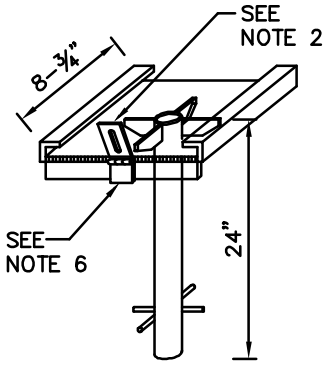
FIXED BOLLARD



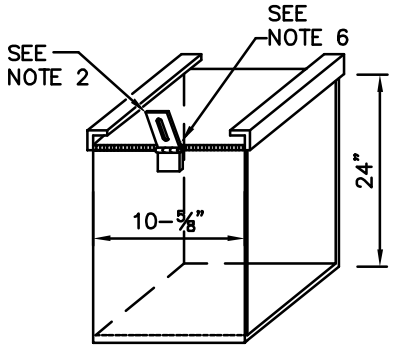
REMOVABLE BOLLARD



SLIDE-THROUGH POST BRACKET
(FOR REMOVABLE BOLLARD)



2" SCHEDULE 40 GALVANIZE PIPE
(FOR SUPPORT PLATE)



GALVANIZED STEEL PLATE
(FOR SUPPORT PLATE)

ALTERNATE BRACKET SUPPORT
(FOR REMOVABLE BOLLARD)

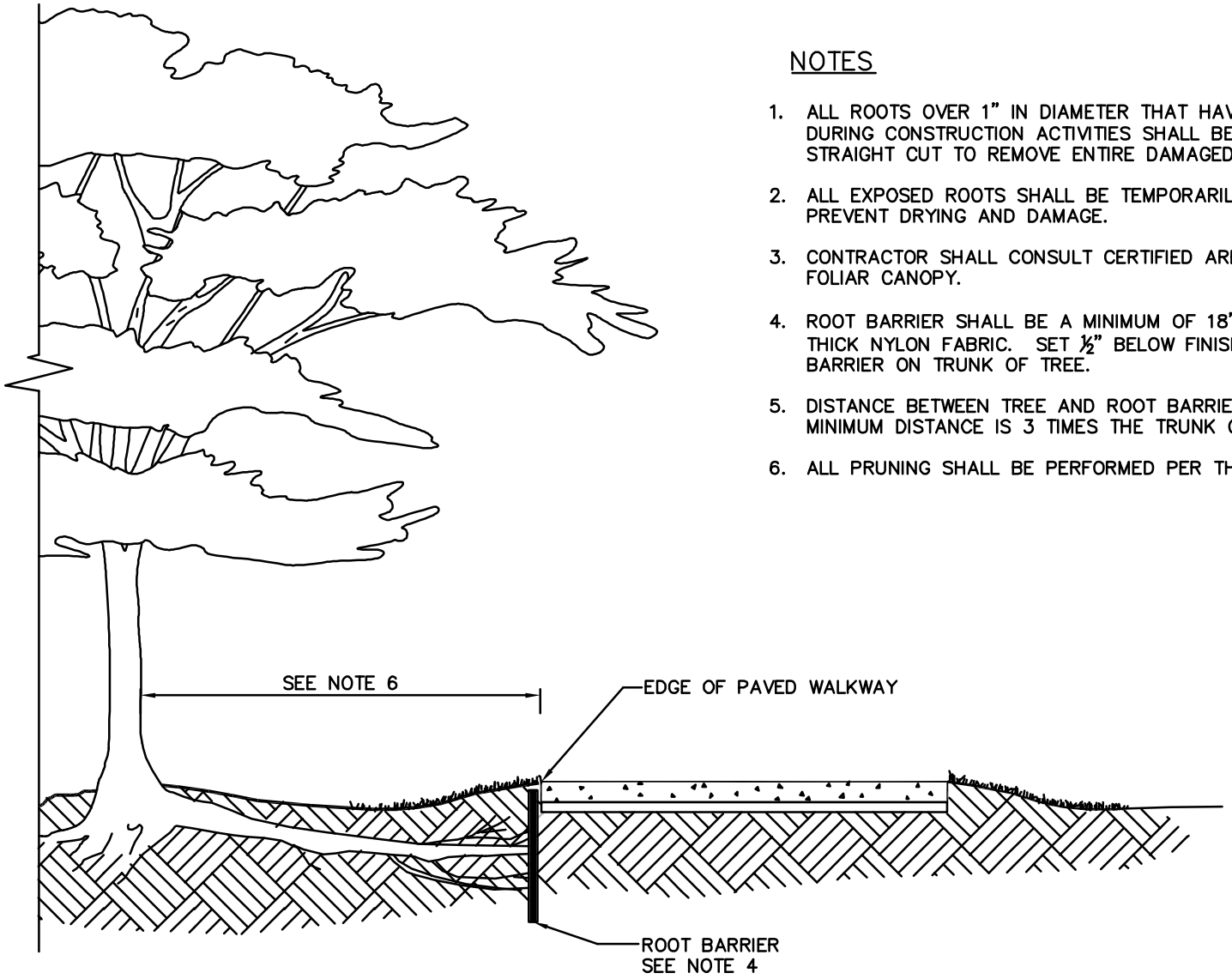
NOTES

1. ALL PLATE MATERIALS SHALL BE ⅜" GALVANIZED STEEL.
2. LOCKING HINGE SHALL BE HEAVY DUTY CLASP. PROVIDE ADEQUATE CLEARANCE BETWEEN PAVEMENT & CLASP TO ALLOW CLASP TO LIE FLAT WHEN OPEN.
3. BOLLARD SHALL BE MANUFACTURED FROM 8" X 8" DOUGLAS FIR #2 OR BETTER AND PRESSURE-TREATED WITH LP-22.
4. REMOVABLE BOLLARD INSTALLATION: PIPE BASES SHALL BE SET IN A 12" DIAMETER HOLE, 32" DEEP; PLATE BASES SHALL BE SET IN A HOLE WITH 2" OF CLEARANCE ON ALL SIDES AND BOTH SHALL BE BACKFILLED WITH CONCRETE. LOCK HASP SHALL FACE THE STREET.
5. FIXED BOLLARD INSTALLATION: FIXED BOLLARDS SHALL BE SET IN A 16" DIAMETER HOLE, 24" DEEP, AND BACKFILLED WITH CONCRETE.
6. ¼" WELD (BOTH SIDES) SHALL BE USED TO MOUNT CLASP.
7. REMOVABLE BOLLARD BASE BRACKET SHALL BE INCISED ¼" TO FIT BOLLARD BASE.
8. FOR REMOVABLE BOLLARD SLIDE THROUGH POST BRACKET, THREE HOLES SHALL BE DRILLED FOR ½" x 1.5" MACHINE SCREWS (STAINLESS STEEL) AS SHOWN.
9. FOR BOLLARD REFLECTIVITY WHITE HIGH INTENSITY 4"x8" DELINEATORS, ZUMAR OR APPROVED EQUAL, SHALL BE INSTALLED ON ALL SIDES OF THE BOLLARD AND FASTENED WITH STAINLESS STEEL LAG SCREWS.
10. DELINEATORS SHALL BE ATTACHED TO ALL BOLLARDS THAT ARE LOCATED WITHIN THE CITY OF BELLEVUE BICYCLE SYSTEM (PER THE BELLEVUE PEDESTRIAN AND BICYCLE TRANSPORTATION PLAN, 2009) OR AS SPECIFIED BY THE ENGINEER.

City of Bellevue

REMOVABLE AND FIXED BOLLARD

DRAWING NUMBER	DEV-14
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



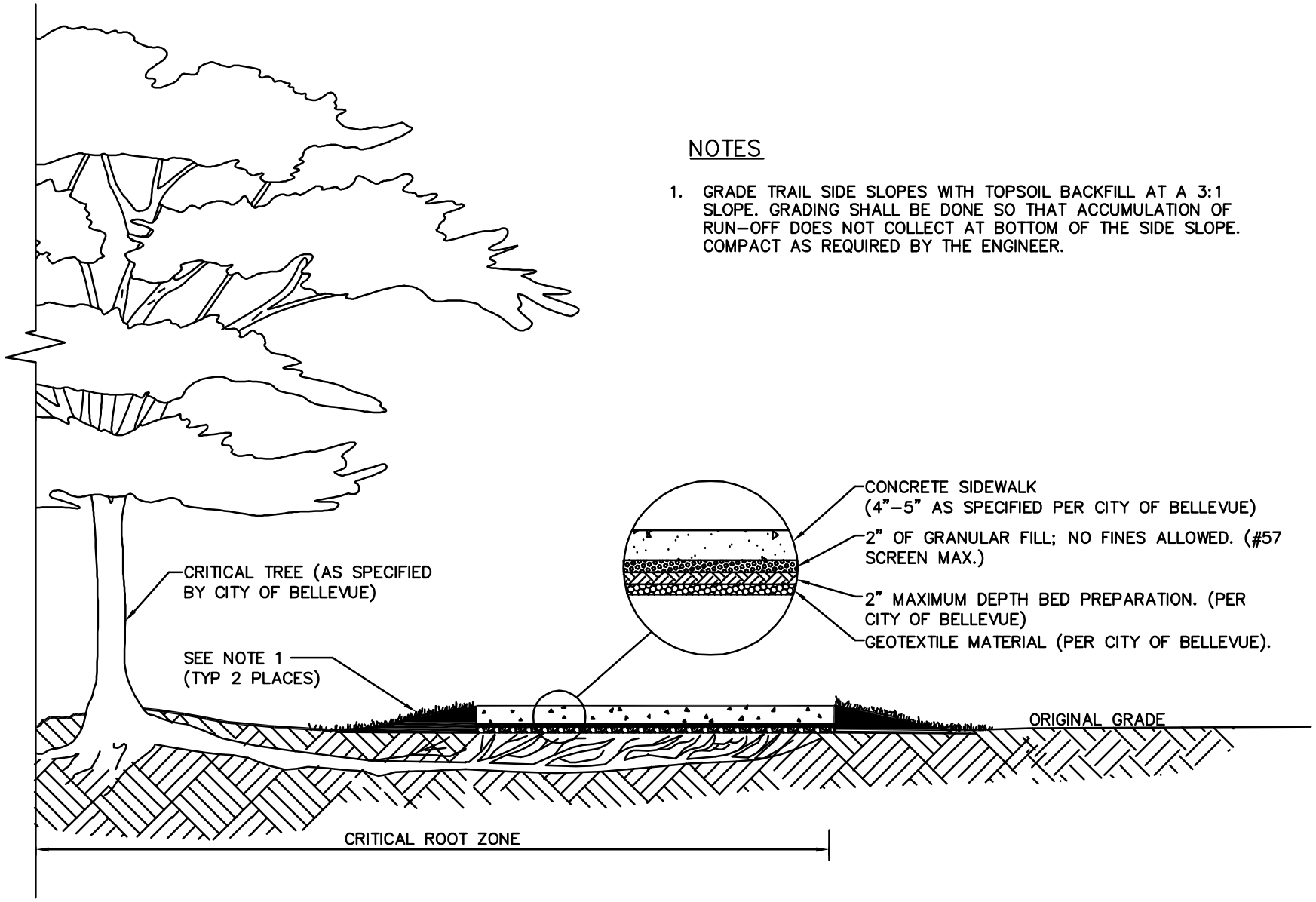
NOTES

1. ALL ROOTS OVER 1" IN DIAMETER THAT HAVE BEEN EXPOSED AND DAMAGED DURING CONSTRUCTION ACTIVITIES SHALL BE REMOVED. MAKE A CLEAN, STRAIGHT CUT TO REMOVE ENTIRE DAMAGED PORTION OF ROOT.
2. ALL EXPOSED ROOTS SHALL BE TEMPORARILY COVERED WITH DAMP BURLAP TO PREVENT DRYING AND DAMAGE.
3. CONTRACTOR SHALL CONSULT CERTIFIED ARBORIST REGARDING THINNING OF FOLIAR CANOPY.
4. ROOT BARRIER SHALL BE A MINIMUM OF 18" DEEP AND SHALL BE MADE OF ¼" THICK NYLON FABRIC. SET ½" BELOW FINISHED GRADE. CENTER ROOT BARRIER ON TRUNK OF TREE.
5. DISTANCE BETWEEN TREE AND ROOT BARRIER TO BE DETERMINED BY ENGINEER. MINIMUM DISTANCE IS 3 TIMES THE TRUNK CALIPER.
6. ALL PRUNING SHALL BE PERFORMED PER THE STANDARDS OF ANSI A300.

City of Bellevue

ROOT BARRIER FOR CONCRETE/PAVED WALKWAY

DRAWING NUMBER	DEV-15
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



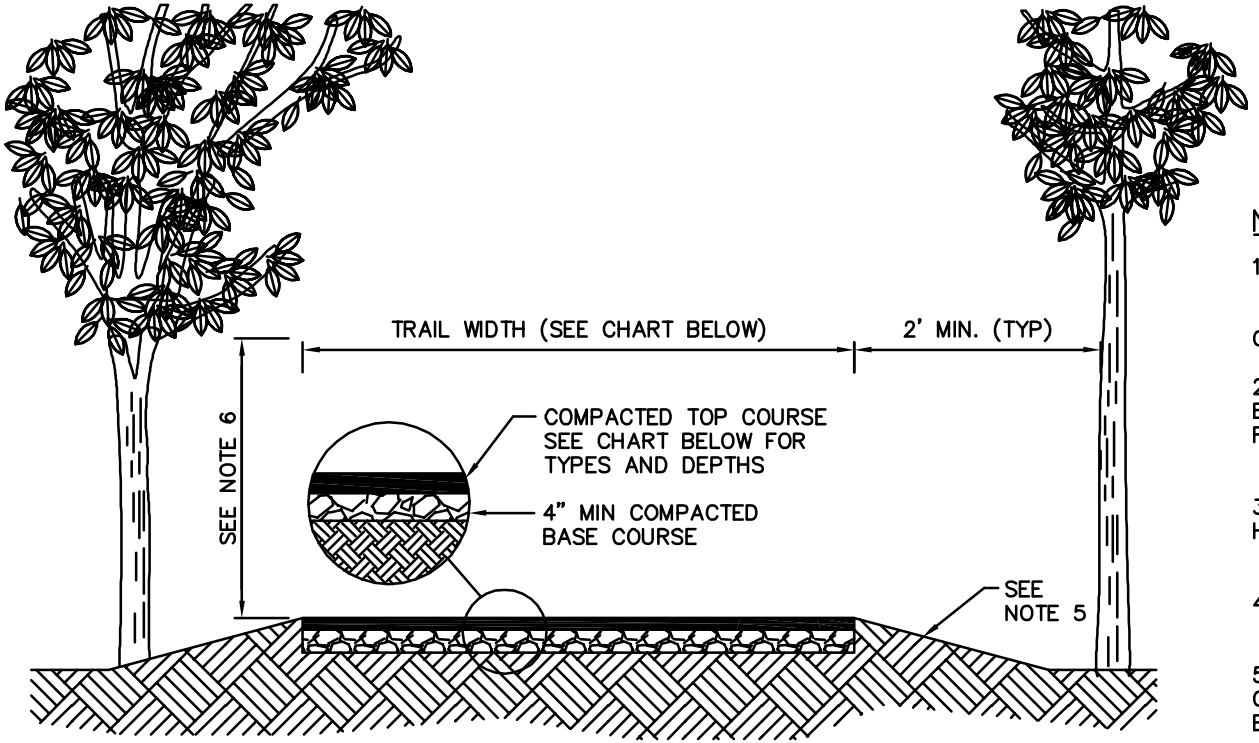
NOTES

1. GRADE TRAIL SIDE SLOPES WITH TOPSOIL BACKFILL AT A 3:1 SLOPE. GRADING SHALL BE DONE SO THAT ACCUMULATION OF RUN–OFF DOES NOT COLLECT AT BOTTOM OF THE SIDE SLOPE. COMPACT AS REQUIRED BY THE ENGINEER.

City of Bellevue

CRITICAL ROOT ZONE BENEATH CONCRETE AND ASPHALT WALKWAY

DRAWING NUMBER	DEV–16
SCALE	NONE
REVISION DATE	12/05
DEPARTMENT	TRANS



TRAIL DIMENSIONS & MATERIALS BY TRAIL TYPE			
TRAIL TYPE	TRAIL WIDTH	TOP COURSE MATERIAL & DEPTH	BASE COURSE MATERIAL
LTD. PRPS. TYPE 1	4'–6'	4" DEPTH MEDIUM WOOD CHIPS	NATIVE SOIL*
LTD. PRPS. TYPE 2	4'–6'	2" DEPTH ¼" MINUS C.R.	¾" MINUS C.R.*
MULTI–PURPOSE	6'–10'	4" DEPTH ¼" MINUS C.R. OR HMA CL. ½" PG 64–22	⅝" MINUS C.R.*
PAVED	6'–10'	2 ½"–4" HMA CL. ½" PG 64–22 OR 3 ½"–5" CONC.**	⅝" MINUS C.R.
BICYCLE	10'–12'	2 ½"–4" DEPTH HMA CL. ½" PG 64–22**	⅝" MINUS C.R.
EQUESTRIAN	4'–6'	4" DEPTH MEDIUM WOOD CHIPS	NATIVE SOIL
* INDICATES FILTER FABRIC BETWEEN COURSES **INDICATES AS SPECIFIED BY THE ENGINEER			

NOTES

1. ALL PLANS MUST BE APPROVED BY THE CITY PRIOR TO CONSTRUCTION OF THE TRAIL. TRAIL CENTERLINE TO BE STAKED IN THE FIELD BY CONTRACTOR AND APPROVED BY THE ENGINEER.

2. ALL HAZARD TREES AND TREE LIMBS AS DEFINED BY THE WASHINGTON STATE DEPT. OF NATURAL RESOURCES HAZARD BULLETIN SHALL BE FELLED AND REMOVED FROM THE SITE.

3. SUBGRADE TO BE TREATED WITH AN APPROVED HERBICIDE PRIOR TO PLACING ASPHALT OR CONCRETE.

4. ROOT BARRIER MAY BE REQUIRED. SEE DWG. DEV–16 IF REQUIRED.

5. MAXIMUM SIDE SLOPE IS 3:1. GRADE WITH COMPACTED TOPSOIL BACKFILL AS REQUIRED. BOTTOM OF SIDESLOPE SHALL BE GRADED TO PREVENT ACCUMULATION OF RUN–OFF.

6. MINIMUM BRANCH CLEARANCE ABOVE TRAIL SURFACE IS 7'. FOR EQUESTRIAN TRIALS MINIMUM BRANCH CLEARANCE FROM TRAIL SURFACE IS 10'.

7. CROSS–SLOPE FOR TRAIL SURFACE IS 2% OR AS DIRECTED BY THE ENGINEER.

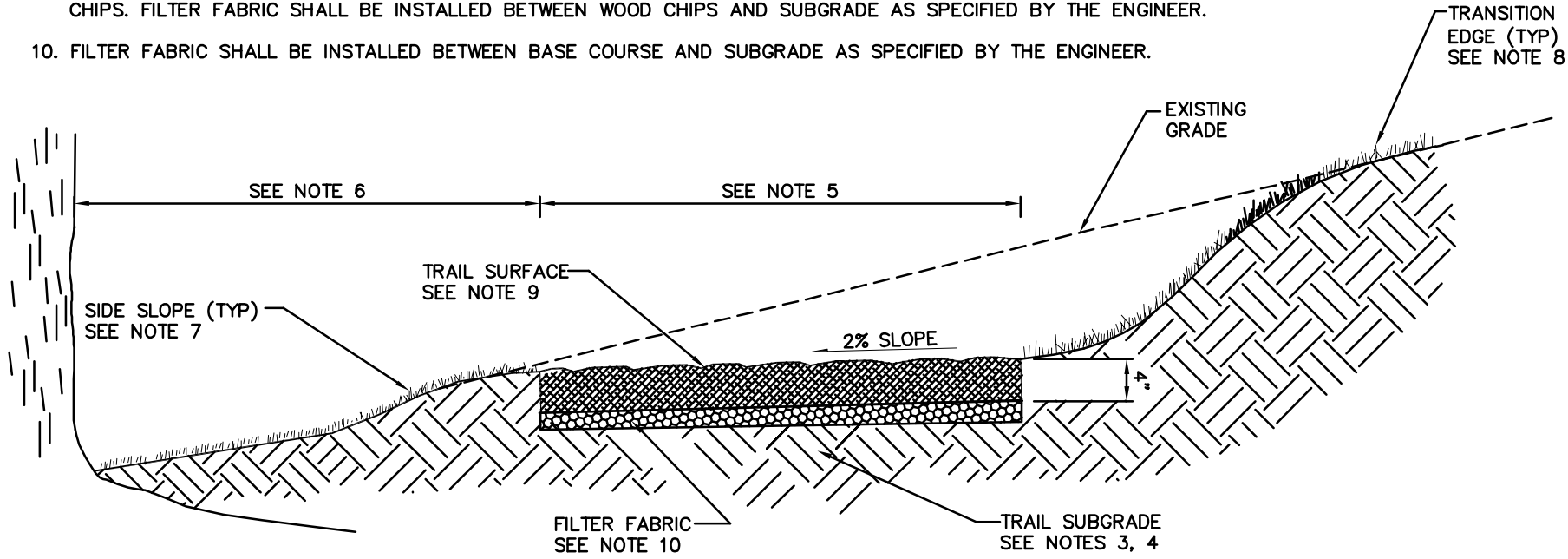
City of Bellevue

TRAIL SECTION DIMENSIONS AND MATERIALS

DRAWING NUMBER	DEV–17
SCALE	NONE
REVISION DATE	12/05
DEPARTMENT	TRANS

NOTES

1. APPROPRIATE DRAINAGE SHALL BE PROVIDED PER CITY OF BELLEVUE REQUIREMENTS.
2. TRAIL ALIGNMENTS SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO START OF CONSTRUCTION OF TRAIL.
3. TRAIL SUBGRADE SHALL BE COMPACTED TO 95% DENSITY. SUBGRADE SHALL CONSIST OF UNDISTURBED NATIVE SOIL.
4. TRAIL SUBGRADE SHALL BE TREATED WITH APPROVED HERBICIDE PRIOR TO FINAL INSTALLATION OF WOOD CHIP SURFACE.
5. TRAIL WIDTH WILL BE SPECIFIED BY THE ENGINEER. GENERAL WIDTHS RANGE BETWEEN 4' TO 6'.
6. TRAIL SHALL HAVE A 2' MINIMUM HORIZONTAL CLEARANCE TO ANY OBSTRUCTION AND A 7' MINIMUM VERTICAL (BRANCH) CLEARANCE FROM TRAIL SURFACE. OBSTRUCTION CLEARANCE REQUIRED BOTH SIDES OF TRAIL.
7. TRAIL SIDESLOPE SHALL BE GRADED WITH TOPSOIL BACKFILL AT A 3:1 SLOPE. GRADING SHALL BE DONE SO THAT ACCUMULATION OF RUN-OFF DOES NOT COLLECT AT BOTTOM OF SLOPE. COMPACT AS REQUIRED.
8. MINIMUM 2' WIDE TRANSITION EDGE REQUIRED PRIOR TO START OF SIDE SLOPE. COVER WITH TOPSOIL AND SEED AS REQUIRED BY THE ENGINEER.
9. TRAIL CROSS SLOPE SHALL BE 2% OR AS DIRECTED BY THE ENGINEER. TRAIL SURFACE DEPTH SHALL BE 4" OF MEDIUM BARK CHIPS. FILTER FABRIC SHALL BE INSTALLED BETWEEN WOOD CHIPS AND SUBGRADE AS SPECIFIED BY THE ENGINEER.
10. FILTER FABRIC SHALL BE INSTALLED BETWEEN BASE COURSE AND SUBGRADE AS SPECIFIED BY THE ENGINEER.



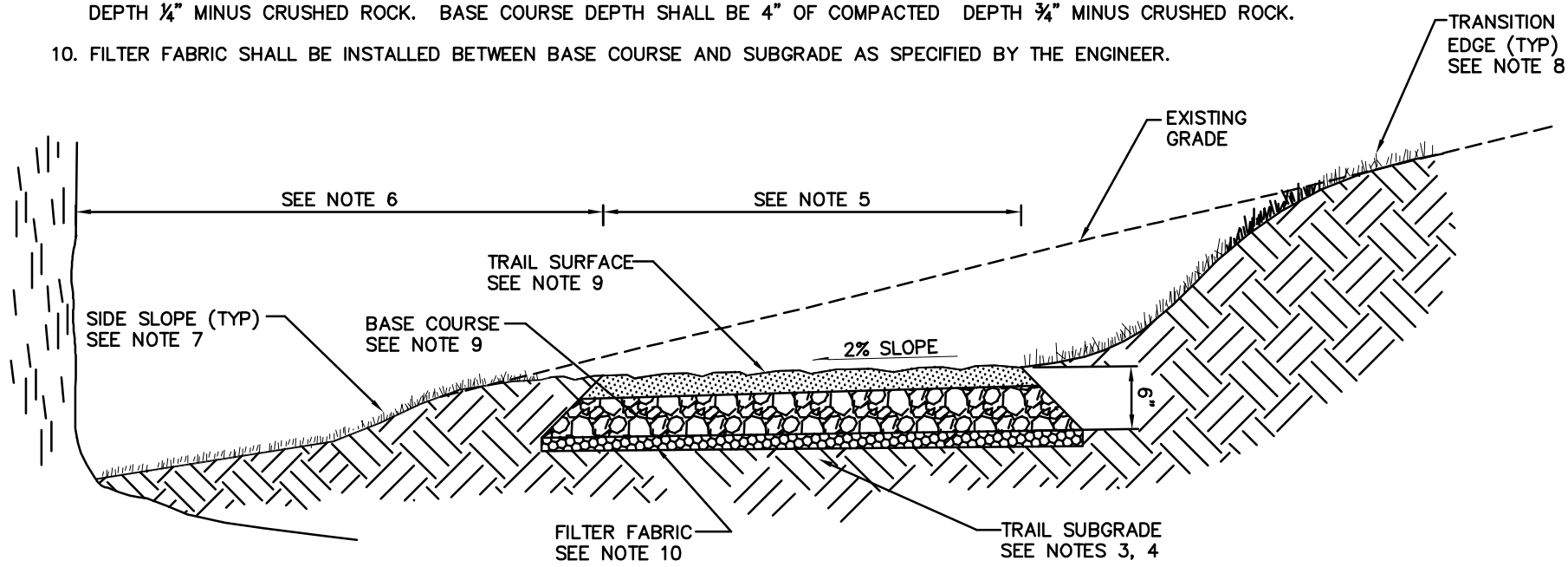
City of Bellevue

TYPICAL WOODCHIP TRAIL

DRAWING NUMBER	DEV-18
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

NOTES

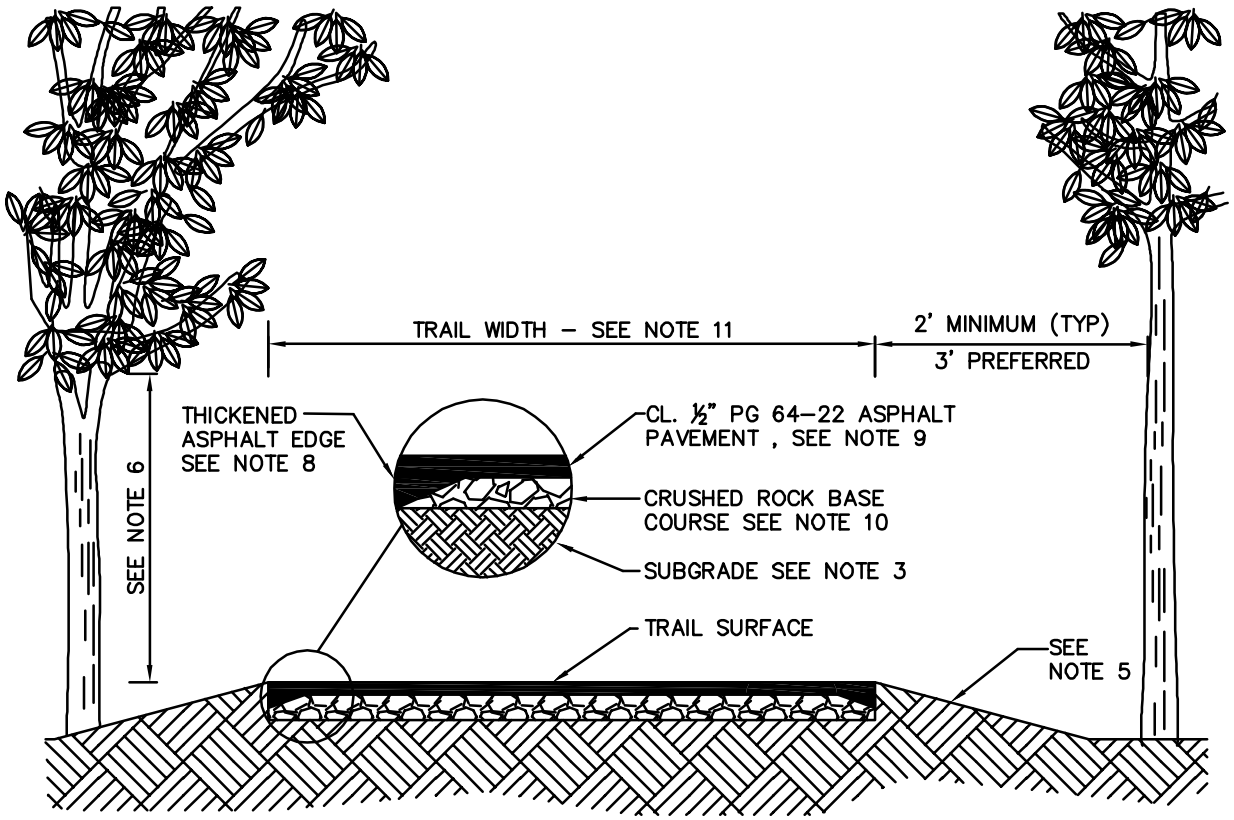
1. APPROPRIATE DRAINAGE SHALL BE PROVIDED PER CITY OF BELLEVUE REQUIREMENTS.
2. TRAIL ALIGNMENTS SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO START OF CONSTRUCTION OF TRAIL.
3. TRAIL SUBGRADE TO BE COMPACTED TO 95% DENSITY. SUBGRADE SHALL CONSIST OF UNDISTURBED NATIVE SOIL.
4. TRAIL SUBGRADE TO BE TREATED WITH APPROVED HERBICIDE PRIOR TO FINAL INSTALLATION OF WOOD CHIP SURFACE.
5. TRAIL WIDTH TO BE SPECIFIED BY THE ENGINEER. GENERAL WIDTHS RANGE BETWEEN 4' TO 6'.
6. TRAIL SHALL HAVE A 2' MINIMUM HORIZONTAL CLEARANCE TO ANY OBSTRUCTION AND A 7' MINIMUM VERTICAL (BRANCH) CLEARANCE FROM TRAIL SURFACE. OBSTRUCTION CLEARANCE REQUIRED BOTH SIDES OF TRAIL.
7. TRAIL SIDESLOPE SHALL BE GRADED WITH TOPSOIL BACKFILL AT A 3:1 SLOPE. GRADING SHALL BE DONE SO THAT ACCUMULATION OF RUN-OFF DOES NOT COLLECT AT BOTTOM OF SLOPE. COMPACT AS REQUIRED.
8. MINIMUM 2' WIDE TRANSITION EDGE REQUIRED PRIOR TO START OF SIDE SLOPE. COVER WITH TOPSOIL AND SEED AS REQUIRED BY ENGINEER.
9. TRAIL CROSS SLOPE IS 2% OR AS DIRECTED BY THE ENGINEER. TRAIL SURFACE DEPTH SHALL BE 2 INCHES OF COMPACTED DEPTH ¼" MINUS CRUSHED ROCK. BASE COURSE DEPTH SHALL BE 4" OF COMPACTED DEPTH ¾" MINUS CRUSHED ROCK.
10. FILTER FABRIC SHALL BE INSTALLED BETWEEN BASE COURSE AND SUBGRADE AS SPECIFIED BY THE ENGINEER.



City of Bellevue

TYPICAL CRUSHED ROCK TRAIL

DRAWING NUMBER	DEV-19
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



NOTES

1. ALL PLANS MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION OF THE TRAIL. TRAIL CENTERLINE TO BE STAKED IN THE FIELD BY CONTRACTOR AND APPROVED BY THE ENGINEER.

2. ALL HAZARD TREES AND TREE LIMBS AS DEFINED BY THE WASHINGTON STATE DEPT. OF NATURAL RESOURCES HAZARD BULLETIN SHALL BE FELLED AND REMOVED FROM THE SITE.

3. SUBGRADE SHALL CONSIST OF UNDISTURBED NATIVE SOIL COMPACTED TO 95% DENSITY. SUBGRADE TO BE TREATED WITH AN APPROVED HERBICIDE PRIOR TO INSTALLATION OF ASPHALT. FILTER FABRIC MAY BE REQUIRED BETWEEN SUBGRADE AND BASE COURSE.

4. ROOT BARRIER MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER; SEE DRAWING DEV–15, DEV–16.

5. MAXIMUM TRAIL SIDE SLOPE IS 3:1. GRADE WITH COMPACTED TOPSOIL BACKFILL AS REQUIRED. BOTTOM OF SIDESLOPE SHALL BE GRADED TO PREVENT ACCUMULATION OF RUN–OFF.

6. MINIMUM BRANCH CLEARANCE ABOVE TRAIL SURFACE IS 7 FEET. FOR EQUESTRIAN TRIALS MINIMUM BRANCH CLEARANCE FROM TRAIL SURFACE IS 10 FEET.

7. MINIMUM CROSS–SLOPE FOR TRAIL SURFACE IS 2%. MAXIMUM CROSS–SLOPE FOR TRAIL SURFACE IS 5%.

8. TRAIL SHALL HAVE THICKENED ASPHALT EDGES FOR EROSION PROTECTION: 6" (THICK) x 10" (WIDE) MINIMUM.

9. ASPHALT PAVEMENT SHALL BE HMA CL. ½" PG 64–22. THICKNESS TO BE SPECIFIED BY THE ENGINEER. MINIMUM THICKNESS IS 3".

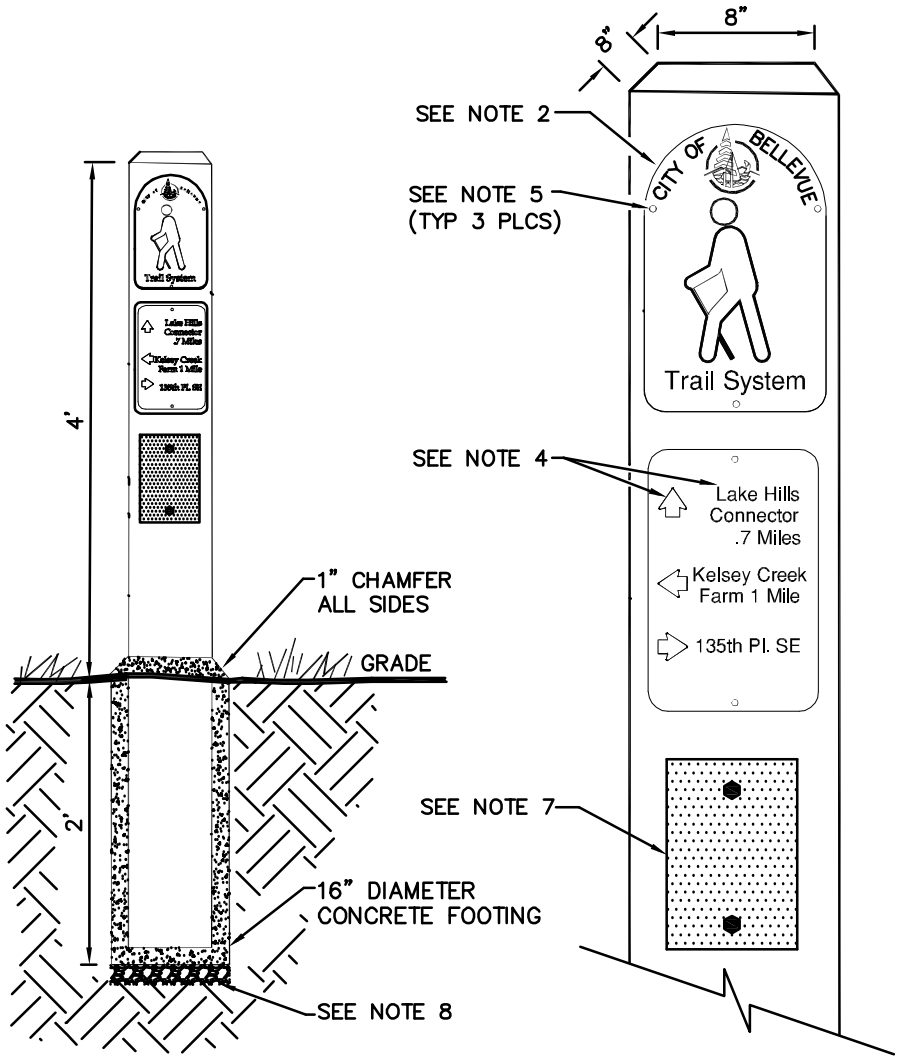
10. BASE COURSE SHALL BE ⅝" MINUS CRUSHED ROCK COMPACTED TO 95% DENSITY. THICKNESS TO BE SPECIFIED BY THE ENGINEER. MINIMUM THICKNESS IS 4".

11. TRAIL WIDTH TO BE DETERMINED BY THE ENGINEER, SEE DWG. DEV–17.

City of Bellevue

ASPHALT SECTION FOR MULTI–PURPOSE AND PAVED PATHS

DRAWING NUMBER	DEV–20
SCALE	NONE
REVISION DATE	3/07
DEPARTMENT	TRANS



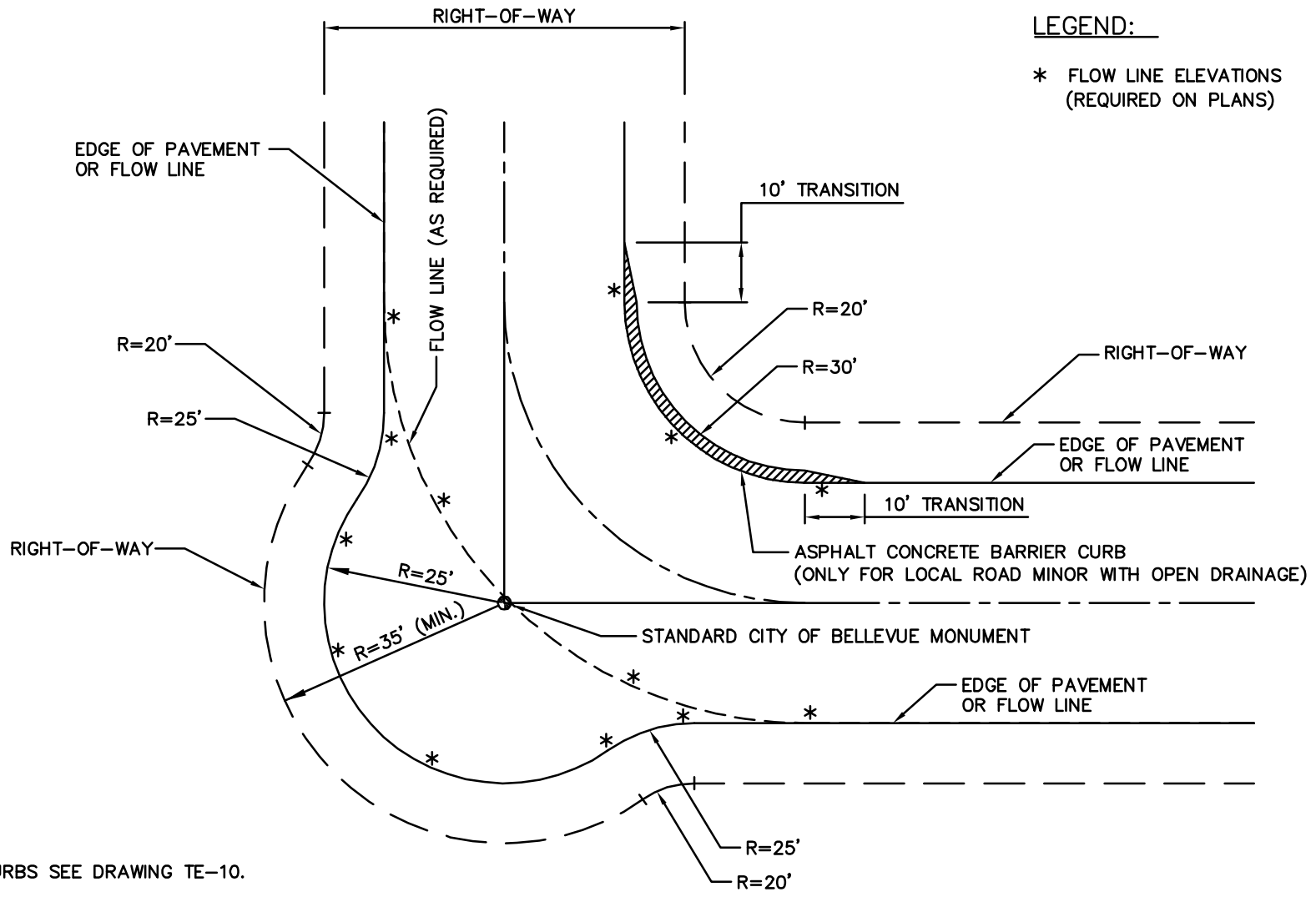
NOTES

1. TEXT AND SYMBOLS ON BOLLARD SIGNS SHALL BE SPECIFIED BY CITY STAFF AND ARE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER.
2. ALL SYMBOLS, CITY OF BELLEVUE LOGO, AND TEXT SHALL BE PAINTED OPAQUE WHITE UNLESS SPECIFIED OTHERWISE. USE HELVETICA FONT WITH ½"CAPS. TRANSITION STRAIGHT EDGE OF SIGN WITH 1–½" RADIUS TO A 10" RADIUS LOCATED AT THE TOP OF THE BOLLARD SIGN.
3. SIGN PLATES SHALL BE ⅛" THICK ALUMINUM LETTERED AND PAINTED AS SPECIFIED BY THE CITY. TIGER DRYLAC SERIES 49 SMOOTH, GLOSSY POLYESTER SYSTEM, POWDER COAT WITH RAC 5018 (BLUE) OR PERFORMANCE EQUIVALENT AND COLOR MATCH. ROUT WOOD ¼" DEEP IN SHAPE OF EACH SIGN PLATE.
4. TRAIL NAMES AND ARROWS SHALL BE WHITE, WEATHER RESISTANT, PRESSURE SENSITIVE VINYL. USE 3M SCHOTCHAL #3470 OR EQUIVALENT. USE HELVETICA FONT WITH ¾" HIGH CAPITAL LETTERS.
5. MOUNT SIGNS TO TWO SIDES OF BOLLARD FACING TRAVEL DIRECTION. USE 5¾" x ⅛" STAINLESS STEEL ALLEN HEAD WOOD SCREWS AND WASHERS. PAINT TO MATCH SIGN FACE.
6. BOLLARD SHALL BE 6' (LONG) x 8" (WIDE) x 8" (THICK) AND MADE FROM PRESSURE TREATED LUMBER TO WITHSTAND RAIN. SET POST 2' DEEP BELOW GRADE. 1" CONCRETE CHAMFER ALL SIDES ABOVE GRADE.
7. A HIGH INTENSITY DELINEATOR SHOULD BE ATTACHED TO ALL BOLLARDS THAT ARE LOCATED WITHIN THE CITY OF BELLEVUE BICYCLE TRANSPORTATION SYSTEM (PER THE BELLEVUE PEDESTRIAN AND BICYCLE TRANSPORTATION PLAN) OR AS SPECIFIED BY THE ENGINEER. USE 4" x 8" ZUMAR OR EQUIVALENT; WHITE COLOR ONLY. INSTALL ON ALL FOUR SIDES OR ALL SIDES WHICH ARE VISIBLE FROM PATH OR TO THE BICYCLIST. FASTEN WITH STAINLESS STEEL LAG SCREWS.
8. INSTALL BASE COURSE OF ¾" MINUS CRUSHED ROCK, 4" THICK BENEATH BOLLARD CONCRETE FOOTING AS SHOWN.
9. BOLLARDS LOCATED ALONG THE MOUNTAINS TO SOUND GREENWAY CORRIDOR SHOULD USE THE ALTERNATIVE MOUNTAINS TO SOUND PLATE.

City of Bellevue

DIRECTIONAL BOLLARD

DRAWING NUMBER	DEV–21
SCALE	NONE
REVISION DATE	6/08
DEPARTMENT	TRANS



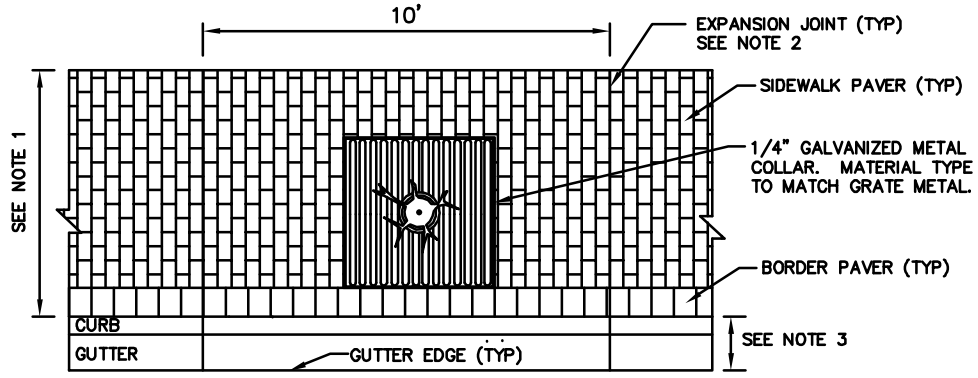
NOTES:

1. FOR CURBS SEE DRAWING TE-10.

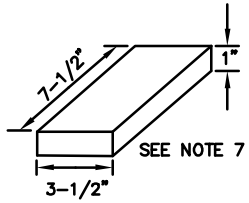
City of Bellevue

RIGHT ANGLE "L" INTERSECTION

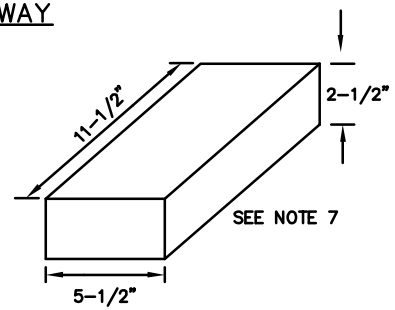
DRAWING NUMBER	DEV-22
SCALE	NONE
REVISION DATE	11/07
DEPARTMENT	TRANS



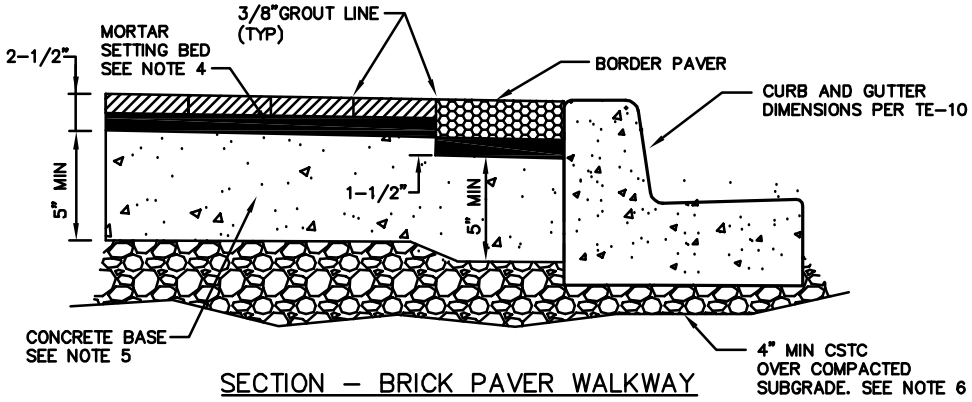
PLAN – BRICK PAVER WALKWAY



SIDEWALK PAVER



BORDER PAVER



SECTION – BRICK PAVER WALKWAY

NOTES:

1. SIDEWALK DIMENSIONS SHALL BE PER THE APPROVED PLANS.
2. 3/8" FULL DEPTH EXPANSION JOINT EVERY 10' OF WALKWAY LENGTH. EXPANSION JOINT SHALL RUN FROM BACK OF WALK TO FRONT OF CONCRETE GUTTER; AT FULL DEPTH FROM TOP OF PAVERS TO CONCRETE BASE. JOINT MATERIAL AND SEAL PER MANUFACTURER'S SPECIFICATIONS.
3. SEE STD. DWG. TE-10 FOR CURB AND GUTTER DIMENSIONS AND SPECIFICATIONS.
4. PLACE 1/16 INCH OR LESS SLURRY BOND COAT TO CONCRETE BASE IMMEDIATELY PRIOR TO INSTALLING MORTAR BED SETTING. MORTAR/ SLURRY SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
5. ADDITIONAL DEPTH MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER. CONCRETE SHALL BE AIR ENTRAINED CLASS 3000 PER WSDOT STANDARD SPECIFICATIONS. REBAR MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
6. CSTC THICKNESS MAY BE INCREASED AT THE DISCRETION OF THE ENGINEER. ENGINEER TO APPROVE SUBGRADE MATERIAL & COMPACTION PRIOR TO CONCRETE BASE INSTALLATION.
7. PAVERS SHALL BE MUTUAL MATERIALS CHESTNUT WITH WIRE CUT SURFACE FINISH. APPLY THIN SLURRY BOND COAT WITH TROWEL ON THE BOTTOM OF PAVER PRIOR TO INSTALLING IN MORTAR SETTING BED.
8. ALL VAULT/UTILITY/ JUNCTION BOX LIDS LOCATED IN THE WALKWAY SHALL HAVE A NON-SKID SURFACE, SLIPNOT GRIP PLATE GRADE 3 SURFACE, IKG INDUSTRIES MEBAC #1 OR APPROVED EQUAL AND ABLE TO BEAR HS-20 TRAFFIC LOADS. MIN. 2" CONCRETE COLLAR REQUIRED.
9. ALL PAVERS AND GROUT LINES SHALL BE WATERSEALED PER MANUFACTURER'S SPECIFICATIONS.

City of Bellevue

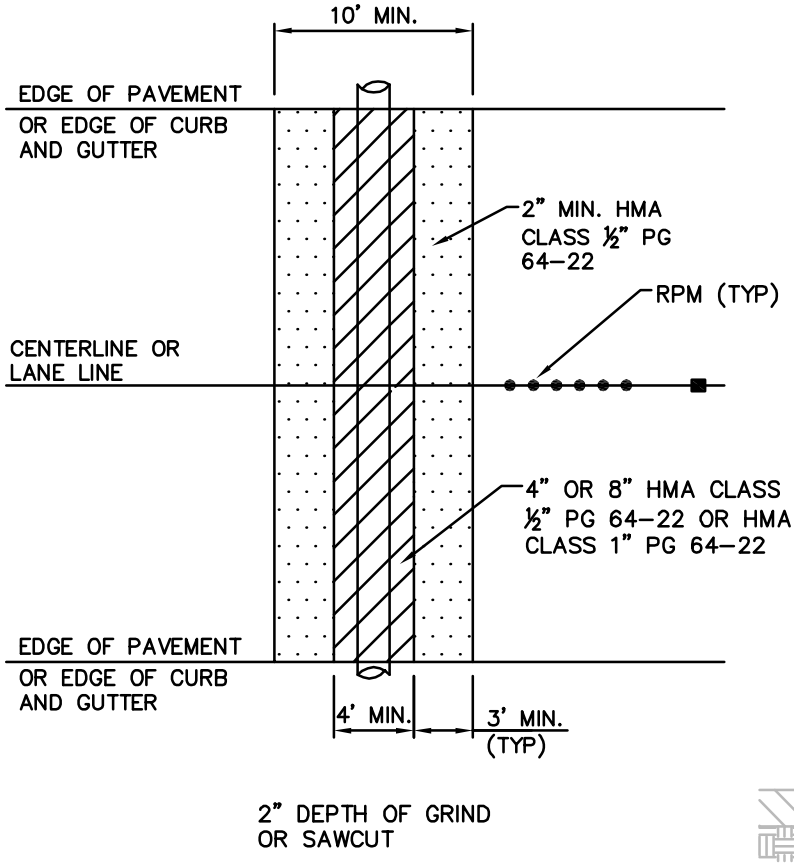
BRICK PAVER INSTALLATION FOR OLD BELLEVUE DISTRICT

DRAWING NUMBER	DEV-23
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

TRANSPORTATION DESIGN MANUAL

ROW Drawings (Right of Way)


CITY OF BELLEVUE
WASHINGTON

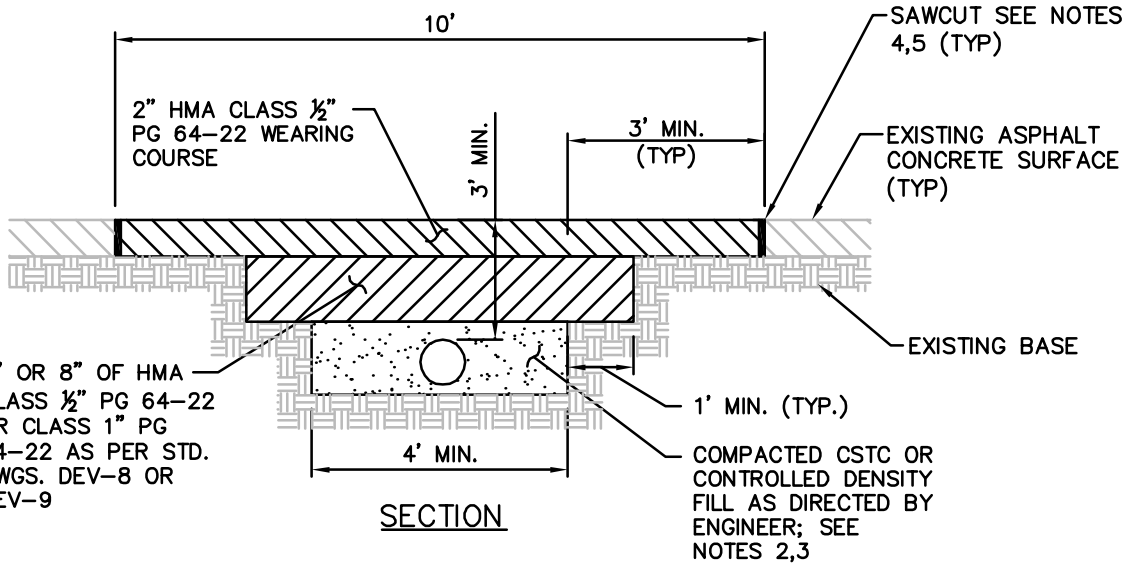


2" DEPTH OF GRIND
OR SAWCUT

PLAN

NOTES:

1. ASPHALT CONCRETE MIX SHALL BE HMA CLASS ½" OR CLASS 1" PG 64–22.
2. ALL TRENCH BACKFILL SHALL BE CSTC OR CONTROLLED DENSITY FILL.
3. CONTROLLED DENSITY FILL SHALL MEET WSDOT STANDARDS AS STATED IN 2–09.3(1)E OF THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION MANUAL M41–10, CURRENT EDITION.
4. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES AS DIRECTED BY ENGINEER.
5. TACK ASPHALT FACES OF SAW CUTS AND SEAL SAW CUTS WITH PG 64–22 OIL.
6. HOT MIX ASPHALT SHALL BE A MINIMUM OF 6 INCHES THICK ON LOCAL STREETS AND A MINIMUM OF 10 INCHES THICK ON ARTERIALS.
7. PAVING FABRIC (IF FOUND) WILL NOT REQUIRE REPLACEMENT.

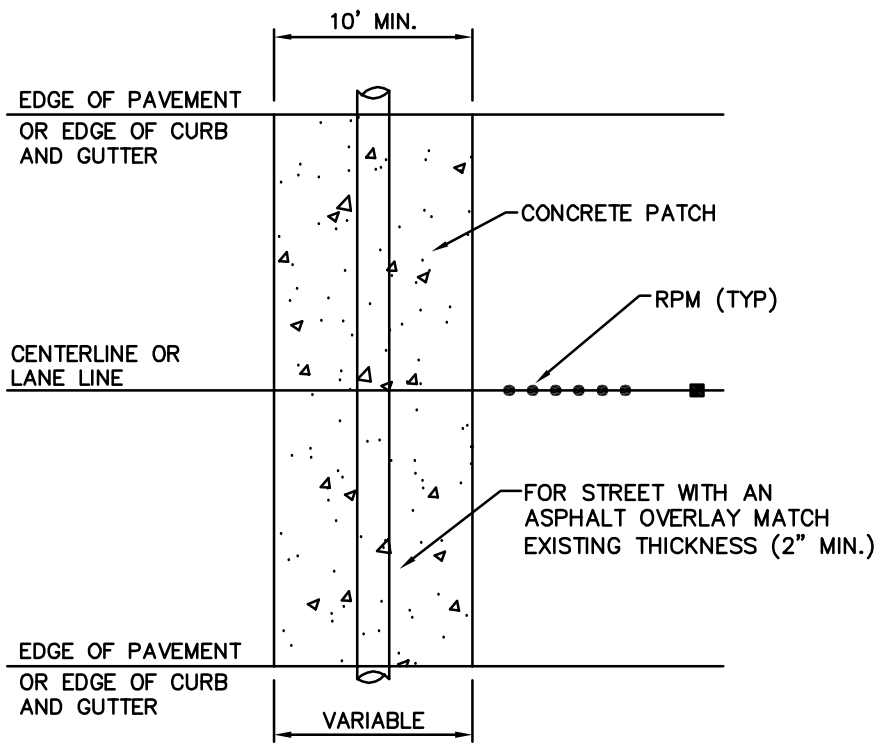


SECTION

City of Bellevue

FLEXIBLE PAVEMENT PATCHING AND RESTORATION DETAILS TRANSVERSE CUT

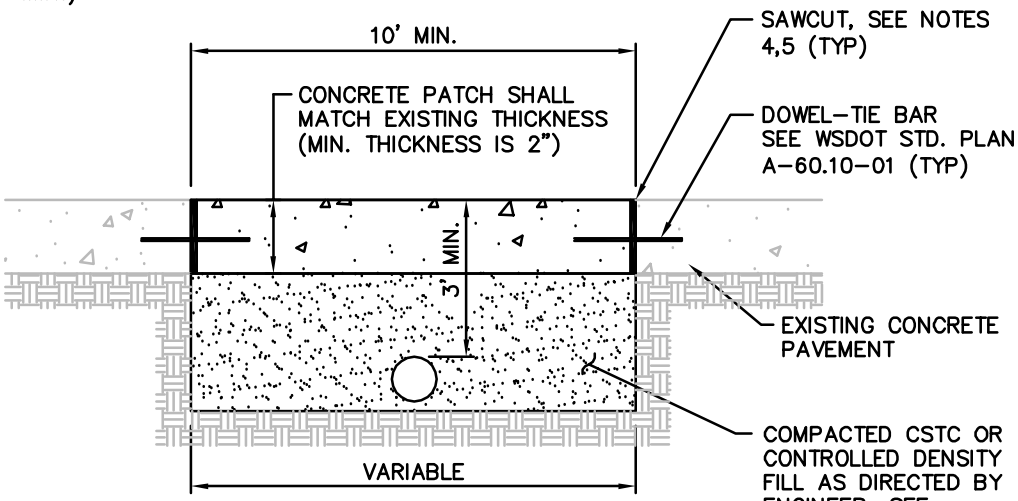
DRAWING NUMBER	ROW–1
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



PLAN

NOTES:

1. CEMENT CONCRETE PANEL REPLACEMENT SHALL BE AS PER WSDOT STD. PLAN A-60.10-01.
2. PORTLAND CEMENT CONCRETE SHALL BE CLASS 4000.
3. ALL TRENCH BACKFILL SHALL BE CSTC OR CONTROLLED DENSITY FILL.
4. CONTROLLED DENSITY FILL SHALL MEET WSDOT STANDARDS AS STATED IN 2-09.3(1)E OF THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION MANUAL M41-10, CURRENT EDITION.
5. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES AS DIRECTED BY ENGINEER.
6. TACK ASPHALT FACES OF SAW CUTS AND SEAL SAW CUTS WITH PG 64-22 OIL.
7. PAVING FABRIC (IF FOUND) WILL NOT REQUIRE REPLACEMENT.
8. THE CITY, AT ITS OWN DISCRETION, MAY REQUIRE REPLACEMENT OF FULL CONCRETE PANEL(S).

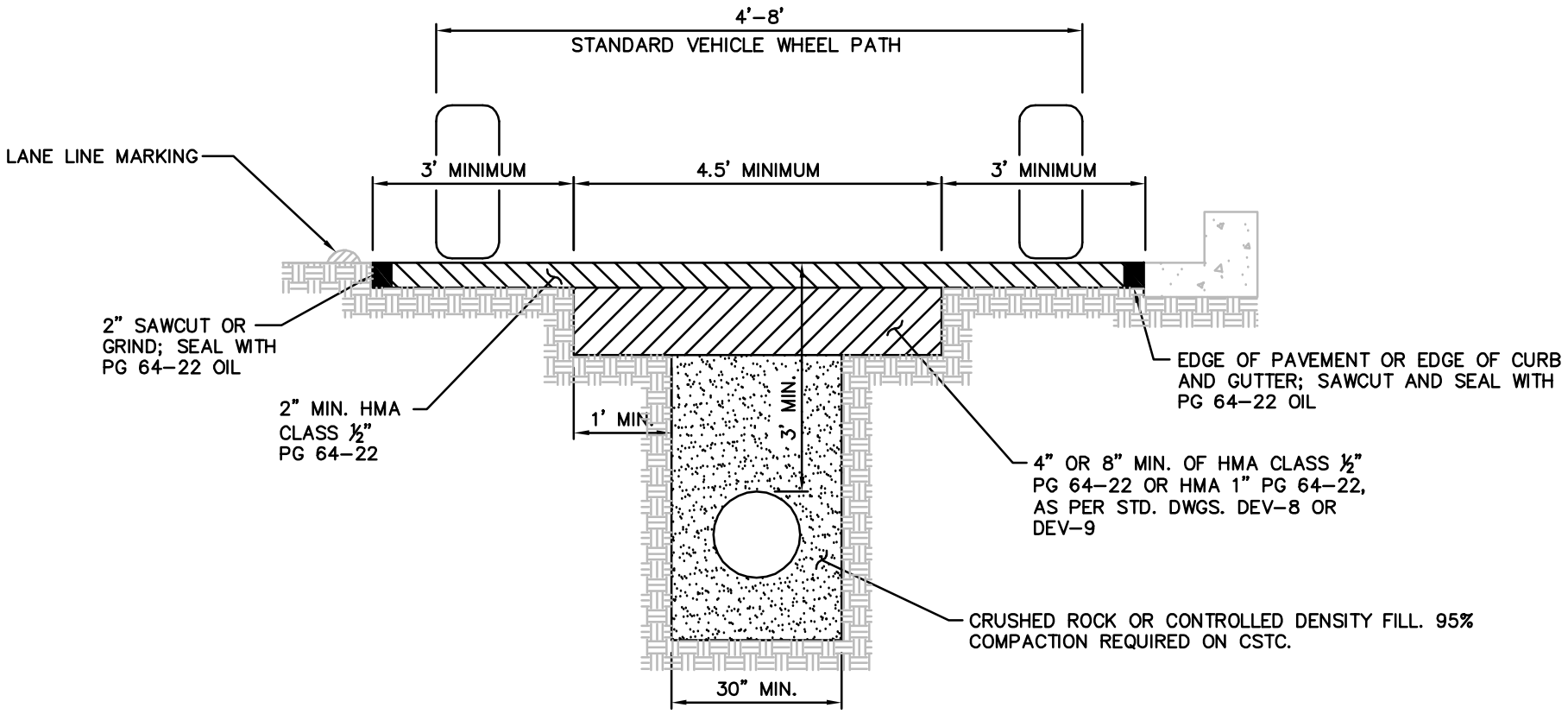


SECTION

City of Bellevue

RIGID PAVEMENT PATCHING AND RESTORATION DETAILS TRANSVERSE CUT

DRAWING NUMBER	ROW-2
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



LESS THAN FULL WIDTH OVERLAY

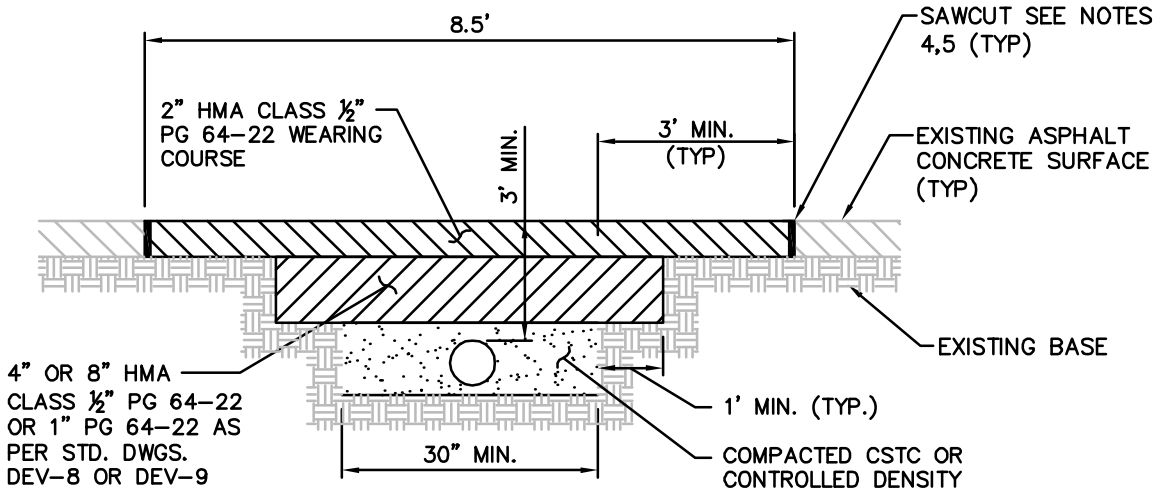
City of Bellevue

SECTION OF LONGITUDINAL CUT

DRAWING NUMBER	ROW–3
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

NOTES:

1. ASPHALT CONCRETE MIX SHALL BE HMA CLASS ½" OR CLASS 1" PG 64–22.
2. ALL TRENCH BACKFILL SHALL BE CSTC OR CONTROLLED DENSITY FILL.
3. CONTROLLED DENSITY FILL SHALL MEET WSDOT STANDARDS AS STATED IN 2–09.3(1)E OF THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION MANUAL M41–10, CURRENT EDITION.
4. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES AS DIRECTED BY ENGINEER.
5. TACK ASPHALT FACES OF SAW CUTS AND SEAL SAW CUTS WITH PG 64–22 OIL.
6. PAVING FABRIC (IF FOUND) WILL NOT REQUIRE REPLACEMENT.
7. HMA SHALL BE A MINIMUM OF 6 INCHES THICK ON LOCAL STREETS AND A MINIMUM OF 10 INCHES THICK ON ARTERIALS.



SECTION

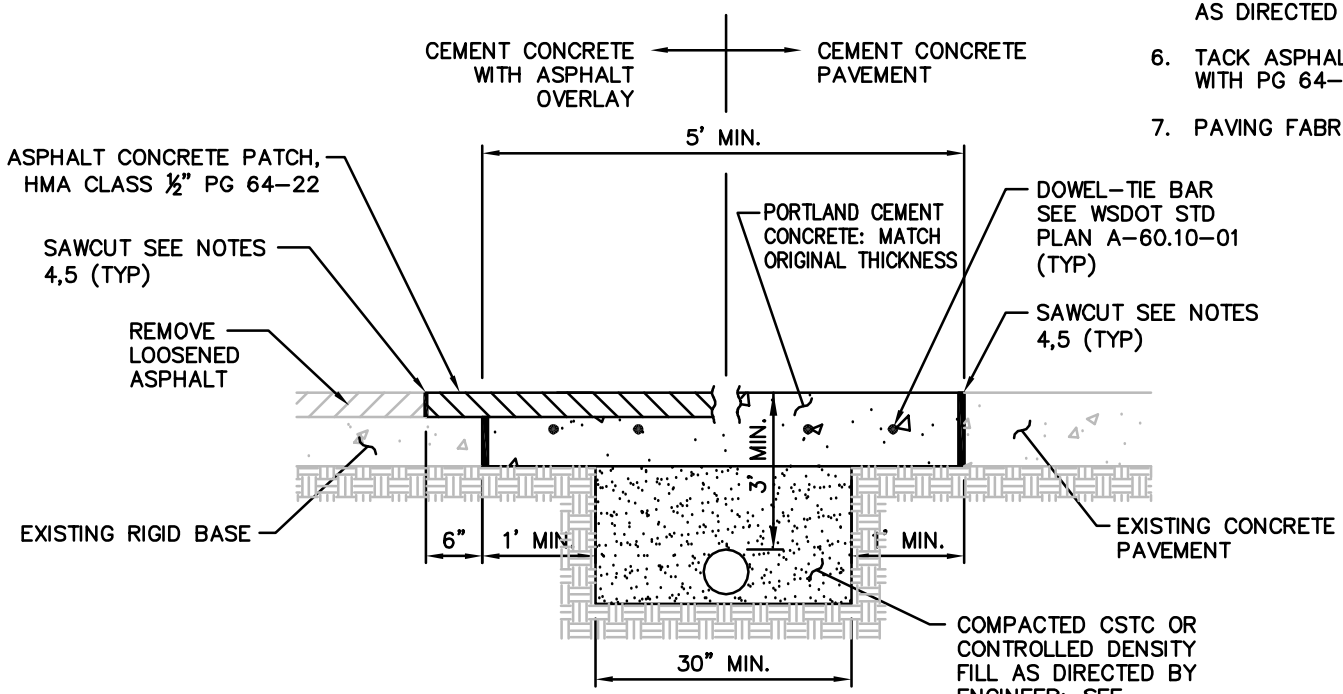
City of Bellevue

FLEXIBLE PAVEMENT PATCHING AND RESTORATION DETAILS LONGITUDINAL CUT

DRAWING NUMBER	ROW–4
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

NOTES:

1. CEMENT CONCRETE PANEL REPLACEMENT SHALL BE AS PER WSDOT STD. PLAN A–60.10–01.
2. ASPHALT CONCRETE MIX SHALL BE HMA CLASS ½" PG 64–22. PORTLAND CEMENT CONCRETE SHALL BE CLASS 4000.
3. ALL TRENCH BACKFILL SHALL BE CSTC OR CONTROLLED DENSITY FILL.
4. CONTROL DENSITY FILL SHALL MEET WSDOT STANDARDS AS STATED IN 2–09.3(1)E OR THE CURRENT VERSION OF THE STANDARDS AND SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION MANUAL M41–10.
5. ALL SAW CUTS SHALL BE VERTICAL AND IN STRAIGHT LINES AS DIRECTED BY ENGINEER.
6. TACK ASPHALT FACES OF SAW CUTS AND SEAL SAW CUTS WITH PG 64–22 OIL.
7. PAVING FABRIC (IF FOUND) WILL NOT REQUIRE REPLACEMENT.



SECTION

City of Bellevue

RIGID PAVEMENT PATCHING AND RESTORATION DETAILS LONGITUDINAL CUT

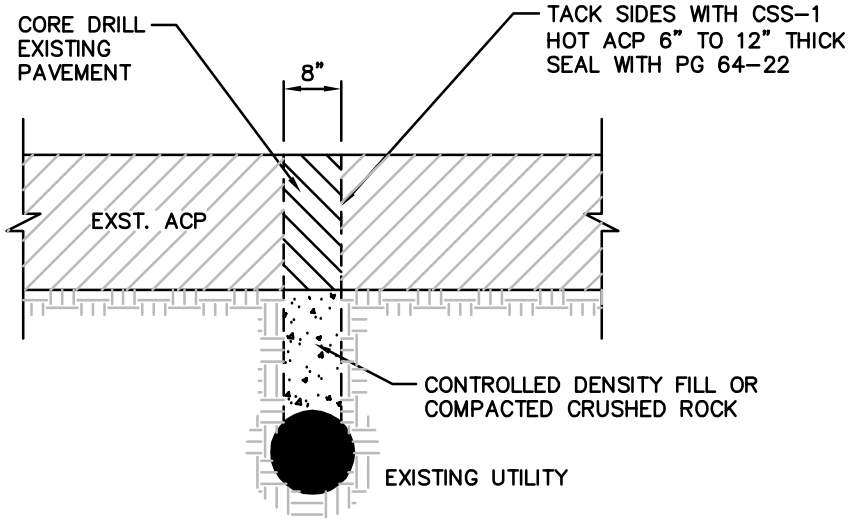
DRAWING NUMBER	ROW–5
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

DELETED AS OF FEBRUARY 12, 2014

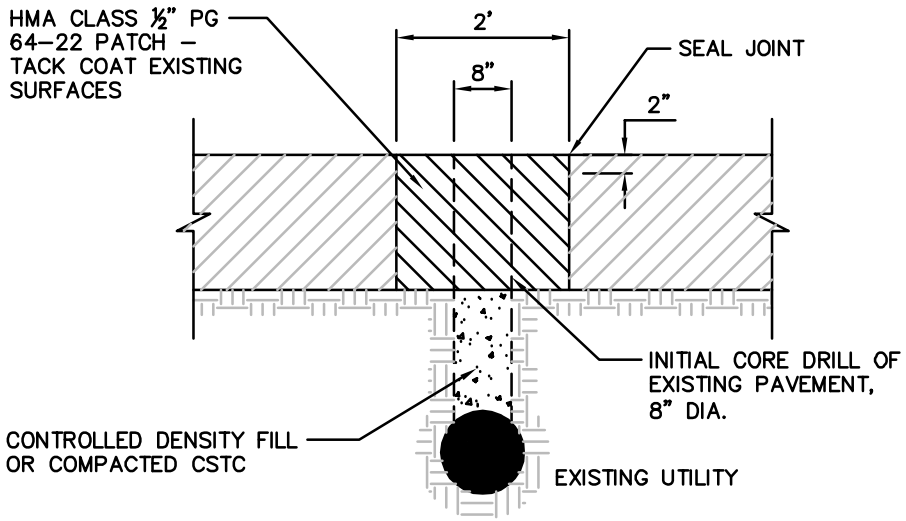
City of Bellevue

MULTI DUCT TRENCH
FOR FOUR OR MORE CONDUITS

DRAWING NUMBER	ROW-6
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

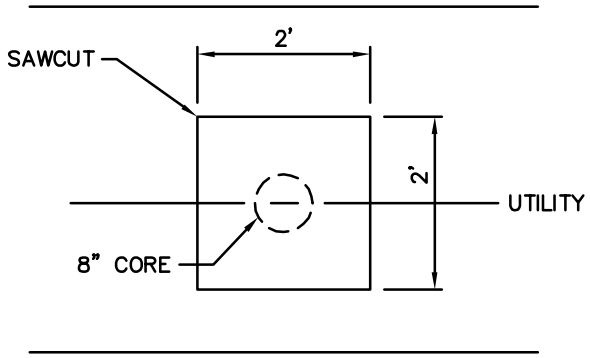


ALTERNATE REPAIR
WHEN REQUIRED BY ENGINEER



NOTES:

1. TO BE USED FOR NO-CUT AND GRIND & OVERLAY STREET RESTORATION CLASSIFICATIONS
2. THE EXISTING PAVEMENT SHALL BE CUT FULL DEPTH WITH AN EIGHT INCH DIAMETER CORE DRILL. THE SUBBASE MATERIAL SHALL BE REMOVED USING A VACUUM EXCAVATOR, KEEPING THE EXCAVATION AS MINIMAL AS POSSIBLE.
3. BACKFILL THE EXCAVATION WITH A SIX INCH CUSHION OF CRUSHED ROCK OVER THE UTILITY THEN PLACE THE REMAINING VOID WITH CDF OR COMPACTED CSTC.
4. REPAIR THE CORED PAVEMENT SECTION WITH HMA CLASS ½" PG 64-22 AND SEAL THE JOINT.
5. IF THE EXCAVATION BELOW THE ASPHALT PAVEMENT IS LARGER THAN THE 8 INCH CORE, THE PAVEMENT RESTORATION WILL INCLUDE A 2' BY 2' TEE PATCH FULL DEPTH OF THE ASPHALT CENTERED ON THE EXCAVATION, AS SHOWN ABOVE AS ALTERNATE REPAIR.
6. IF THE EXCAVATION IS LARGER THAN 2' BY 2', THE STANDARD GRIND AND OVERLAY RESTORATION SHALL BE USED.



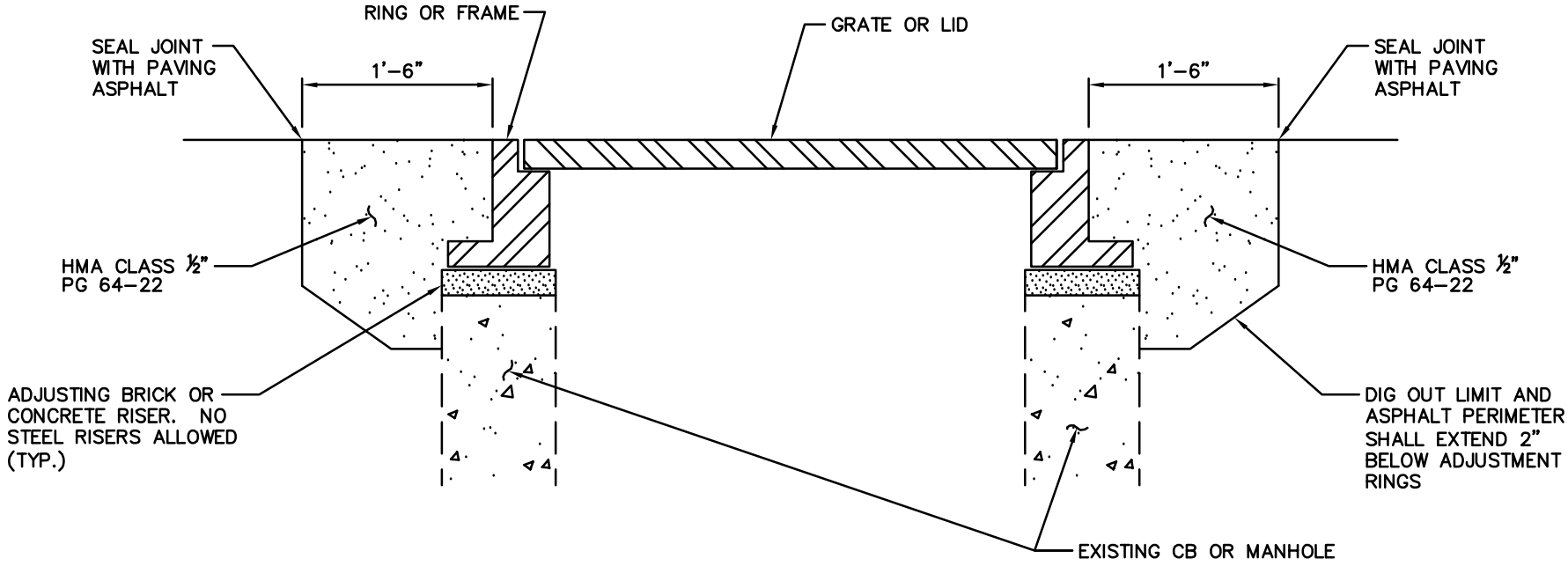
City of Bellevue

PAVEMENT RESTORATION FOR WINDOW CUTS

DRAWING NUMBER	ROW-7
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

UTILITY MANHOLE AND VAULT ADJUSTMENT

THE EXISTING IRON FRAME AND COVER OR GRATE SHALL BE REMOVED AND THOROUGHLY CLEANED FOR REINSTALLATION TO THE NEW ELEVATION. THE EXISTING STRUCTURE SHALL BE RAISED OR LOWERED TO THE REQUIRED ELEVATION USING CONCRETE BLOCKS, BRICK, AND/OR CONCRETE RINGS. EACH JOINT SHALL BE GROUTED USING A ¾ INCH LAYER OF NON-SHRINK MORTAR, PLASTERED SMOOTH INSIDE AND OUT. COVERS SHALL BE SEATED ON A UNIFORM LAYER OF GROUT TO PREVENT ROCKING.



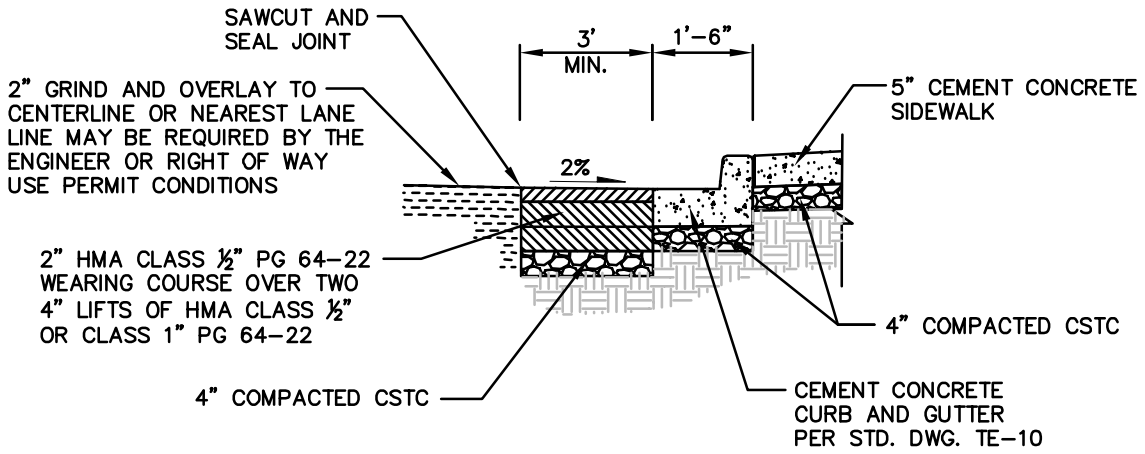
UTILITY ADJUSTMENT DETAIL

NTS

City of Bellevue

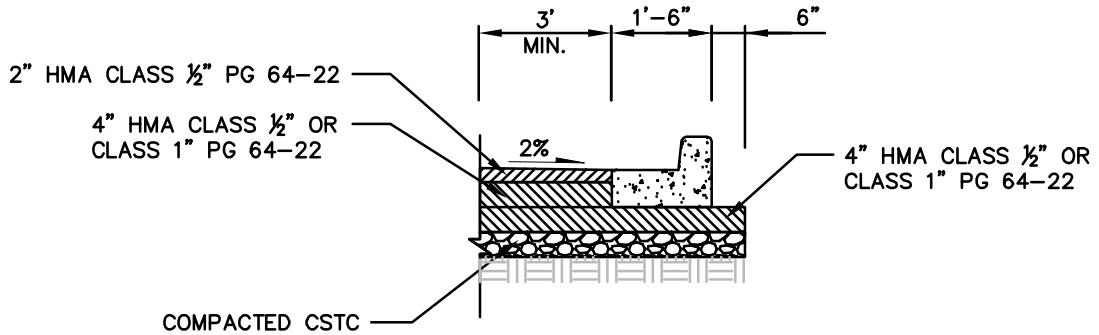
UTILITY ADJUSTMENT DETAIL

DRAWING NUMBER	ROW-8
SCALE	NONE
REVISION DATE	11/07
DEPARTMENT	TRANS



TYPICAL ASPHALT PAVEMENT DETAIL AT CURB/GUTTER INSTALLATION

NTS



TYPICAL ASPHALT PAVEMENT DETAIL FOR CURB/GUTTER ADJACENT TO PLANTER STRIP OR NDP FEATURE

NTS

NOTES:

1. NO PLATE COMPACTION ALLOWED. COMPACTION BY ROLLER ONLY.
2. WIDTH OF SAWCUT FROM GUTTER LINE OR CURB FACE MAY BE INCREASED AT THE DISCRETION OF THE ENGINEER.

City of Bellevue

TYPICAL ASPHALT PAVEMENT DETAILS

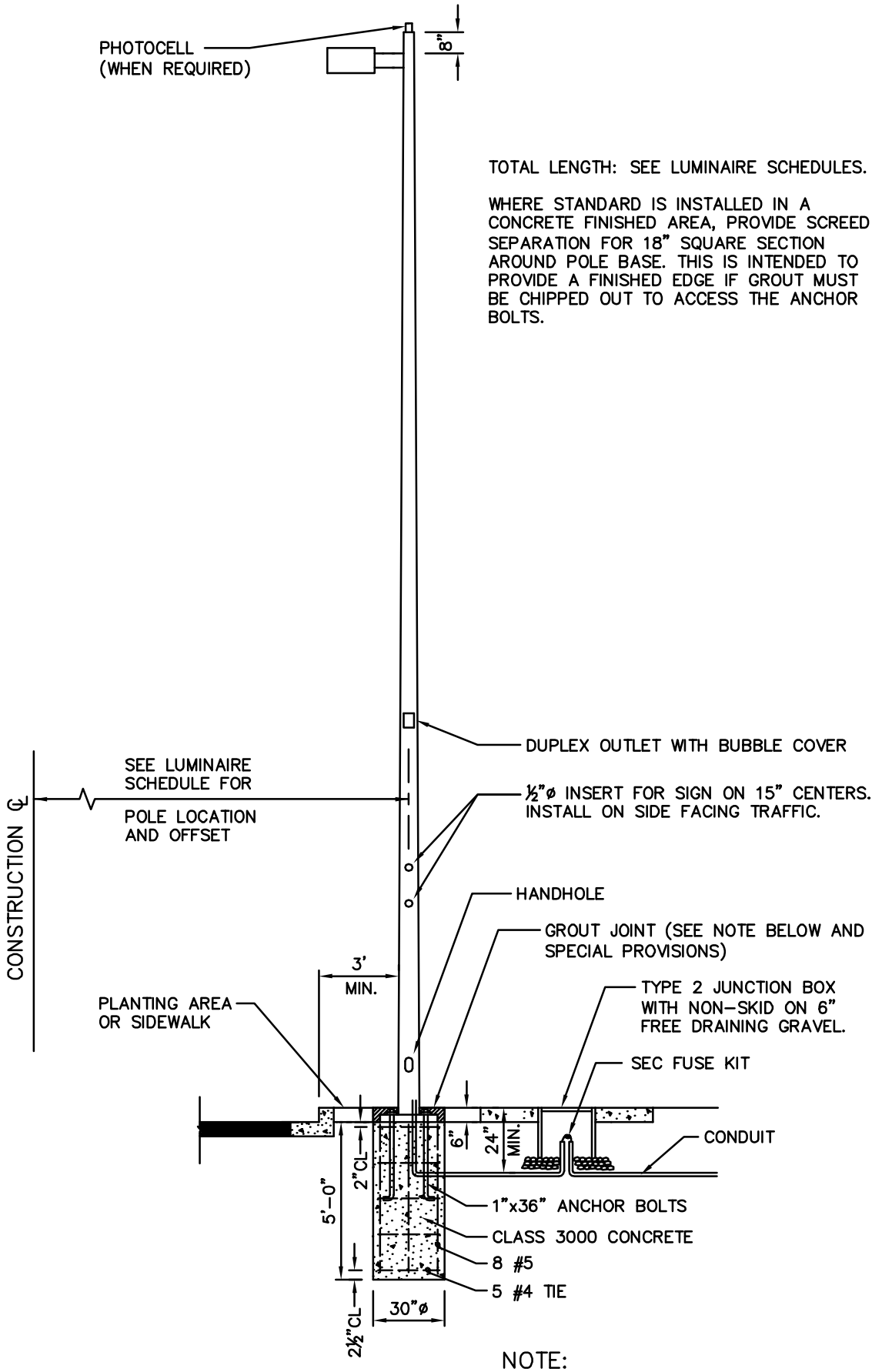
DRAWING NUMBER	ROW-9
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS


CITY OF BELLEVUE
WASHINGTON

TRANSPORTATION DESIGN MANUAL

TSSL Drawings (Traffic Signals & Street Lights)


CITY OF BELLEVUE
WASHINGTON

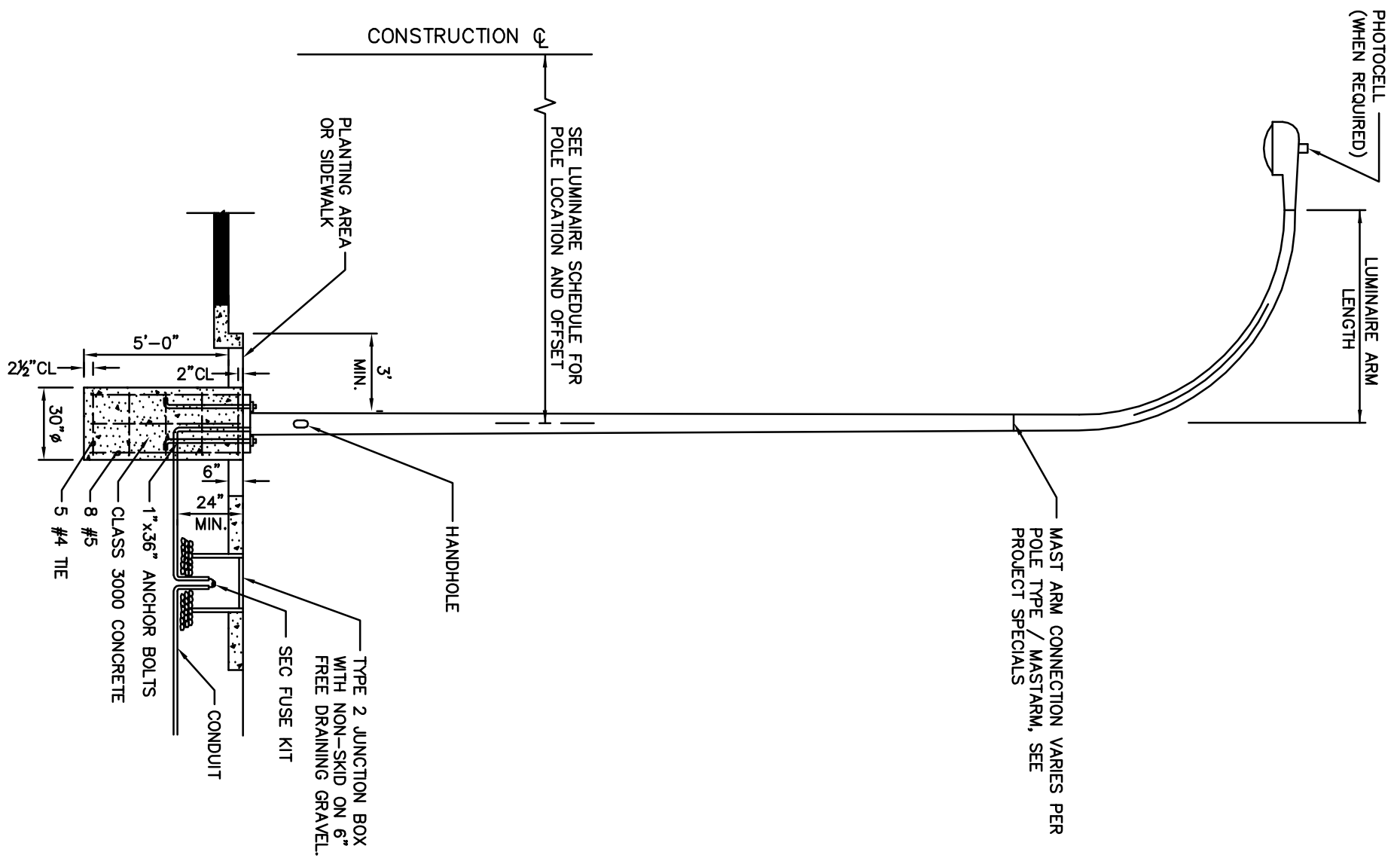


NOTE:
WHEN FOUNDATION IS IN SIDEWALK AREA TOP 6" SHALL CONSIST OF 4" SAND UNDER 2" GROUT. WHEN FOUNDATION IS IN PLANTING STRIP TOP 6" SHALL BE TOPSOIL.

DRAWING NUMBER	TSSL-1		
SCALE	NONE		
REVISION DATE	11/12		
DEPARTMENT	TRANS		

ROADWAY LIGHTING DETAIL (CONCRETE POLE)

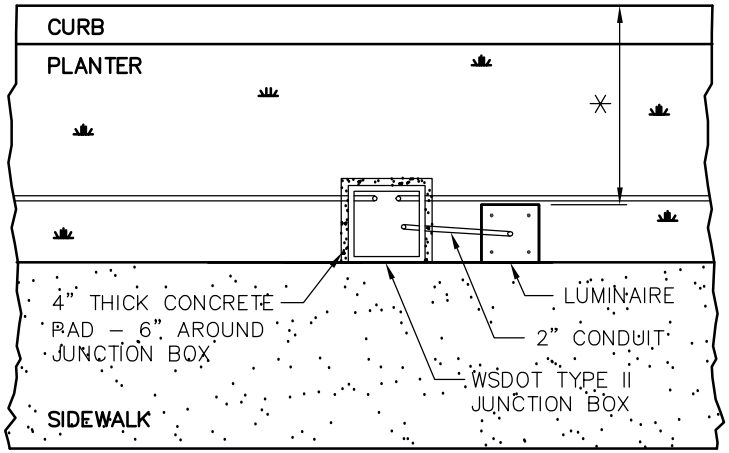
City of Bellevue



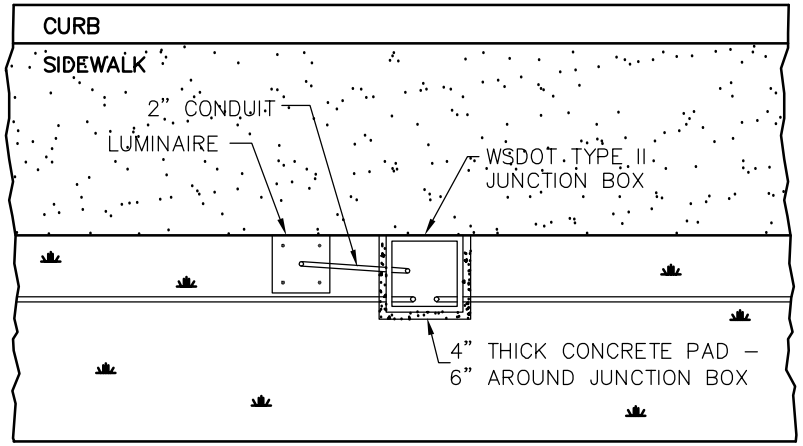
City of Bellevue

ROADWAY LIGHTING DETAIL (DAVIT POLE)

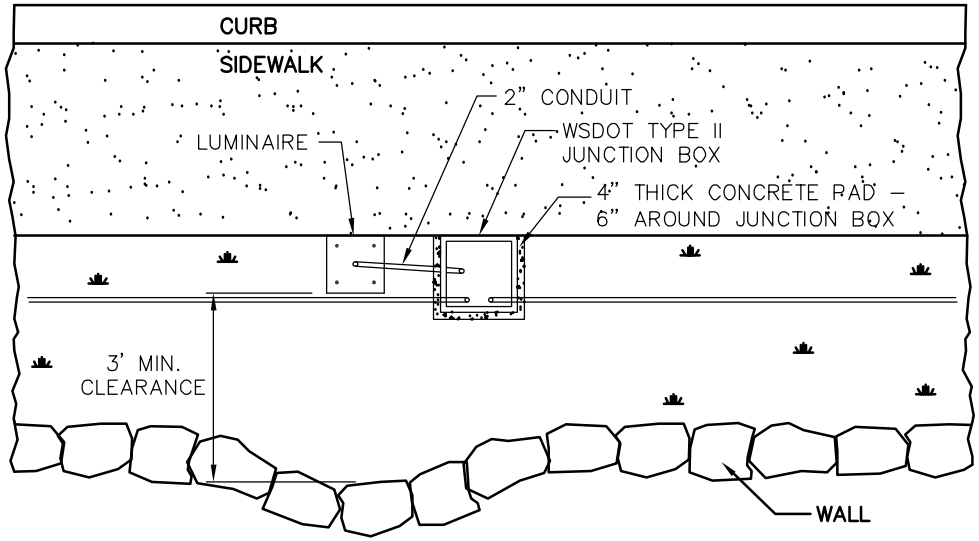
DRAWING NUMBER	TSSL-2
SCALE	NONE
REVISION DATE	5/13
DEPARTMENT	TRANS



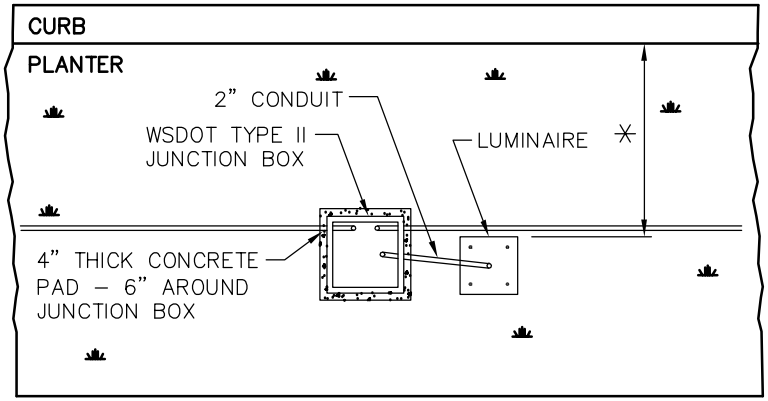
SIDEWALK WITH PLANTER STRIP



SIDEWALK WITH PLANTER BEHIND



SIDEWALK WITH VERTICAL WALL



NO SIDEWALK

NOTE:

1. MUST MAINTAIN 3' MINIMUM CLEARANCE FROM POLE HANDHOLE TO ANY OBSTRUCTION.

✳ LUMINAIRE POLE TO FACE OF CURB 36" MIN.

City of Bellevue

TYPICAL LUMINAIRE LOCATIONS

DRAWING NUMBER	TSSL–3
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

LUMINAIRE SCHEDULE FOR CONTACTOR CABINET @ _____ STA. CABINET #_____							
COB POLE NO.*	LUM. NO. ⬡	CIRCUIT NO.	STATION (OFFSET)	TYPE–DISTRIBUTION –WATT	POLE HEIGHT	POLE TYPE	COMMENTS
NE 8@100–01	1	1	12+73 (38 LT)	COBRAHEAD MC III 250 HPS	35'	DAVIT	
EGATE@139–06	2	2	14+05 (30 RT)	SHOEBOX MC II 250 HPS	12.2 m	EXPOSED AGGREGATE	
	3						
	4						
	5						

* ASSIGNED BY C.O.B. SIGNAL & LIGHTING ENGINEER.

ILLUMINATION WIRE SCHEDULE		
RUN NO. △	CONDUCTORS	CONDUIT
1	2#8 (ILL.), 2#8 (REC.), 1#8 (GROUND)	2"
2	4#8 (ILL.), 2#8 (REC.), 1#8 (GROUND)	2"
3		
4		
5		

ILL. = ILLUMINATION
REC. = RECEPTACLES

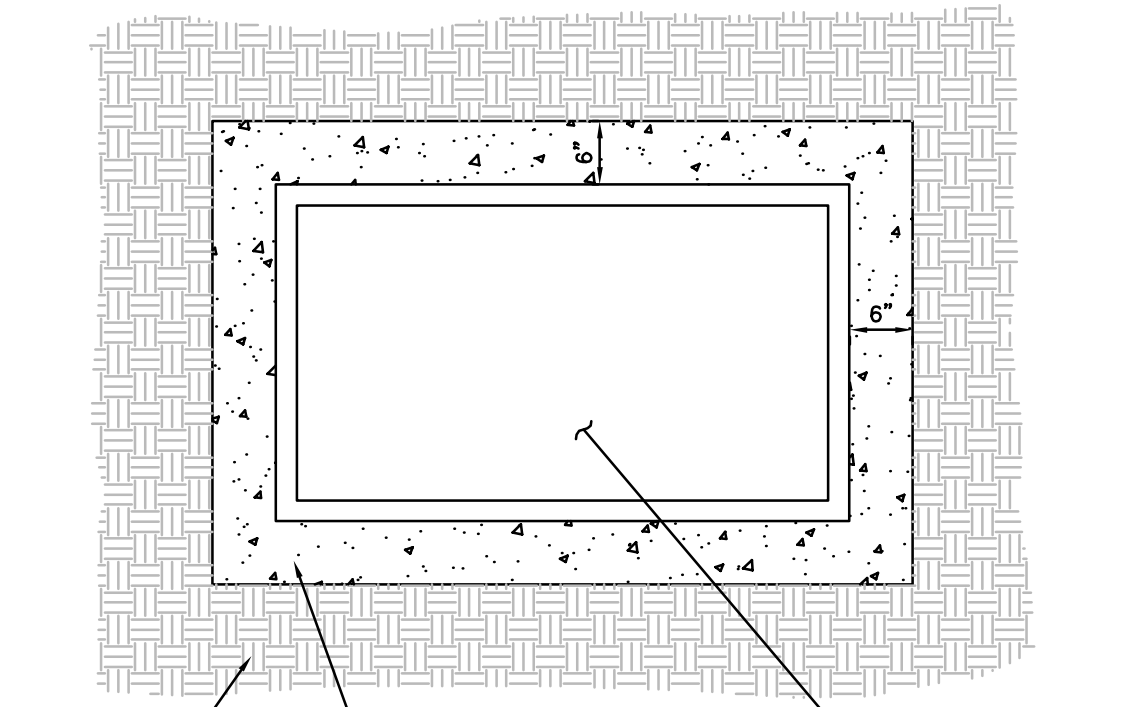
City of Bellevue

LUMINAIRE SCHEDULE AND ILLUMINATION WIRE SCHEDULE

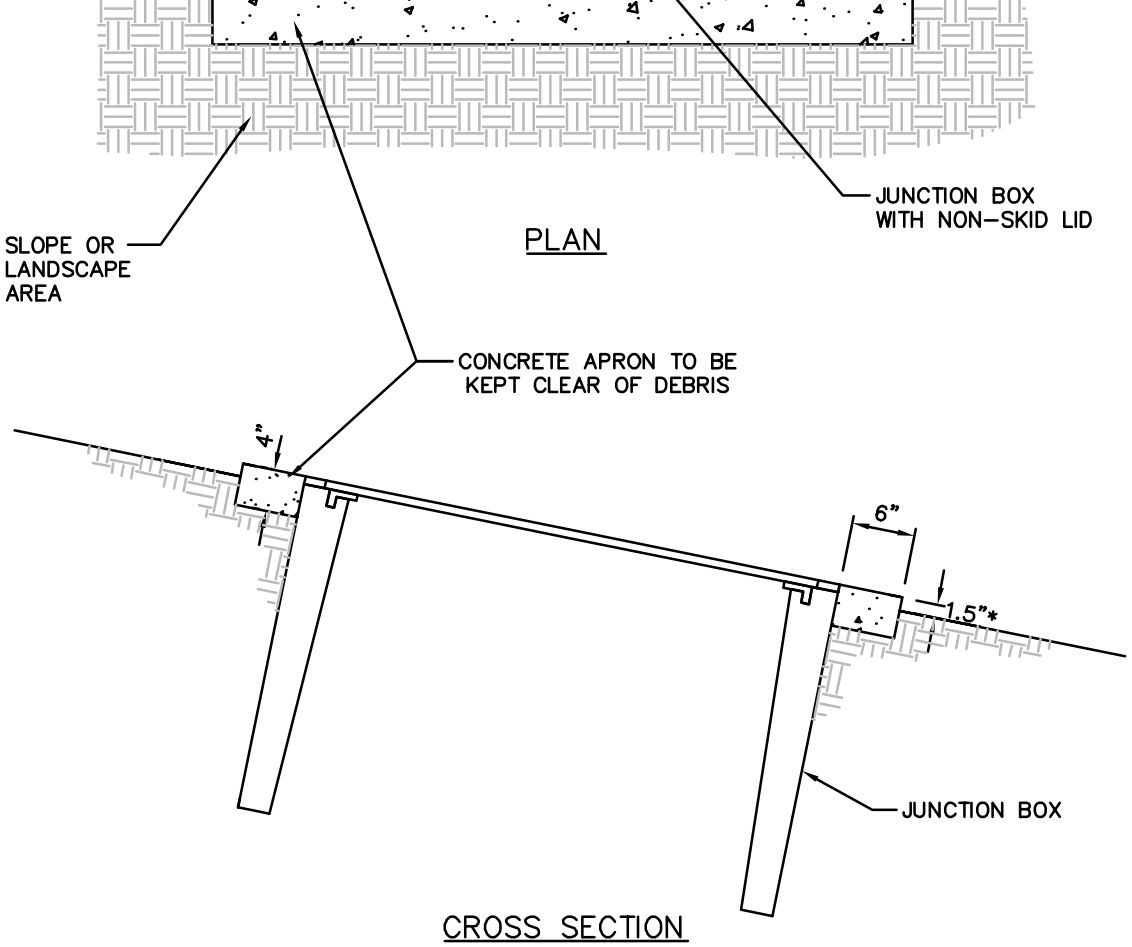
DRAWING NUMBER	TSSL–4
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

DRAWING NUMBER	TSSL-5
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

TYPE 1/TYPE 2 JUNCTION BOX ON GRADE FOR LANDSCAPE AREAS



PLAN



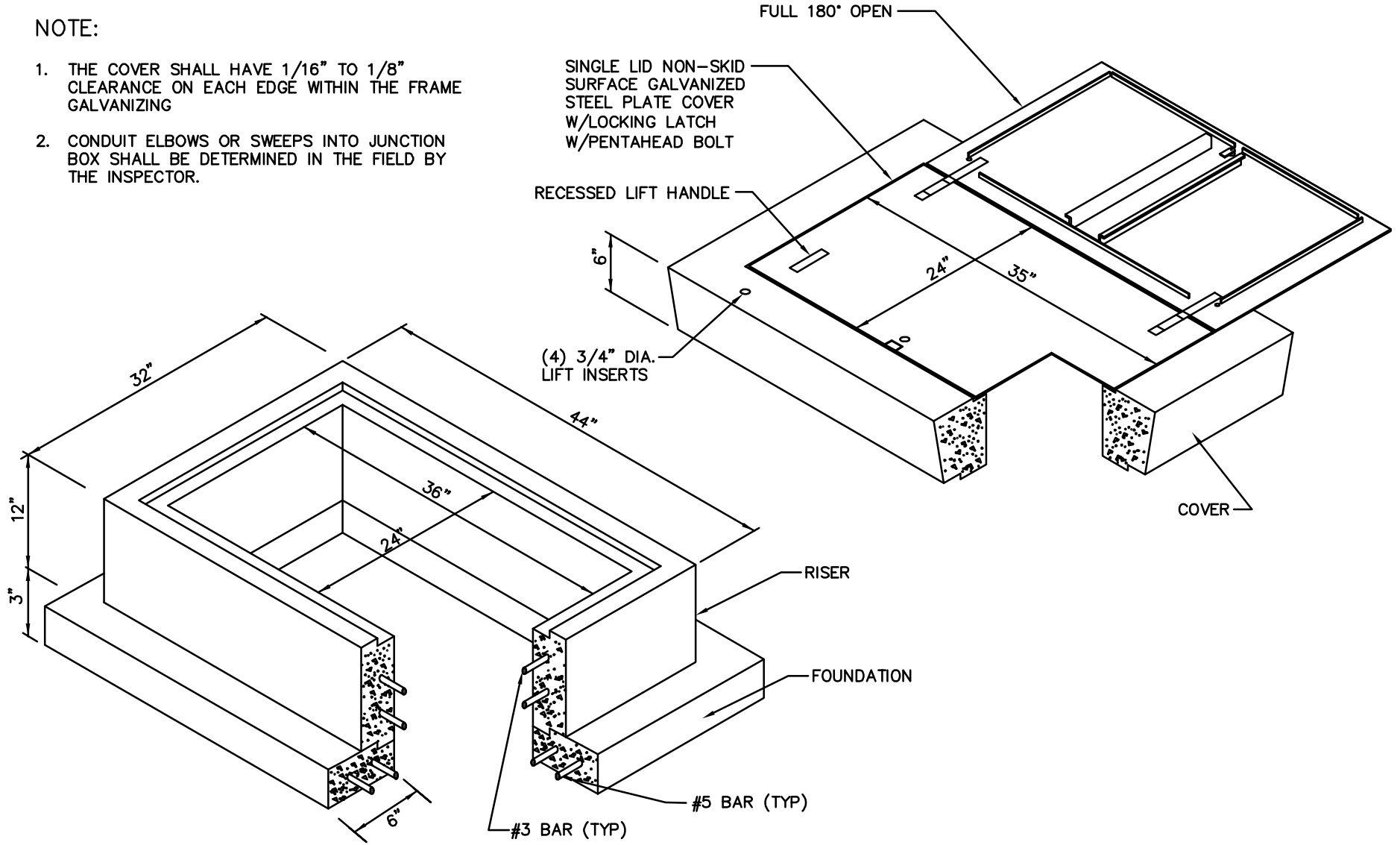
CROSS SECTION

* NOTE: DO NOT PROVIDE 1.5" CLEARANCE WITHIN PEDESTRIAN FACILITIES

City of Bellevue

NOTE:

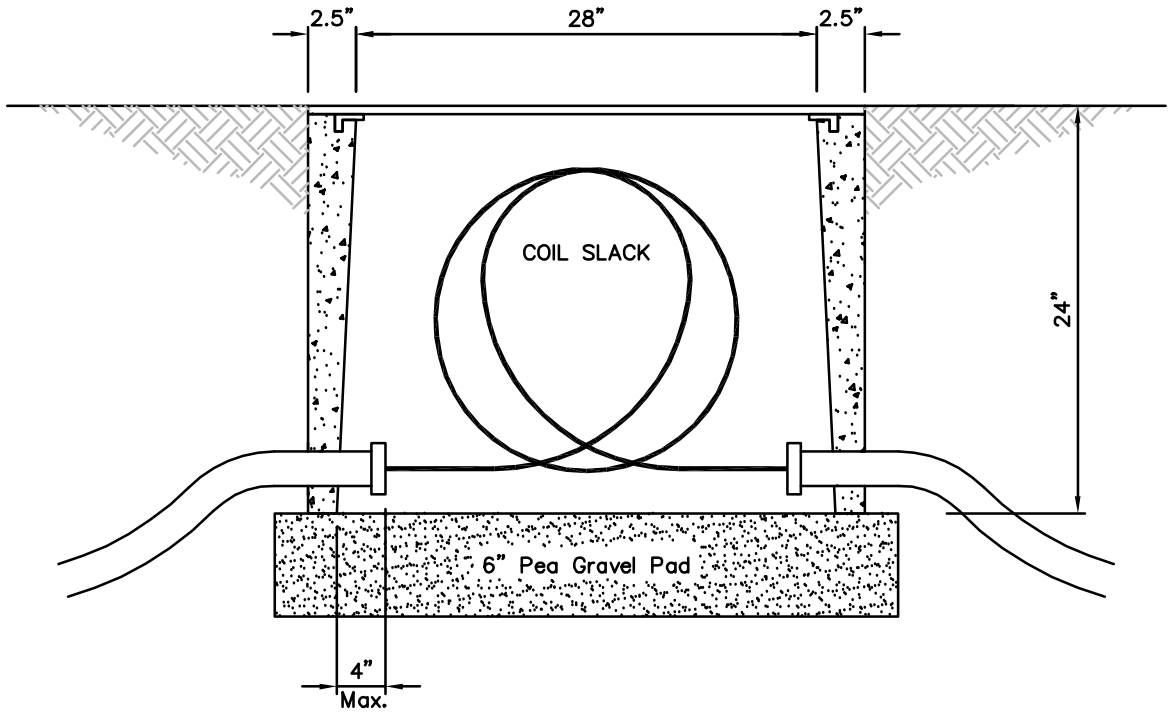
1. THE COVER SHALL HAVE 1/16" TO 1/8" CLEARANCE ON EACH EDGE WITHIN THE FRAME GALVANIZING
2. CONDUIT ELBOWS OR SWEEPS INTO JUNCTION BOX SHALL BE DETERMINED IN THE FIELD BY THE INSPECTOR.



City of Bellevue

TYPE 8 MODIFIED JUNCTION BOX

DRAWING NUMBER	TSSL-6
SCALE	NONE
REVISION DATE	10/08
DEPARTMENT	TRANS

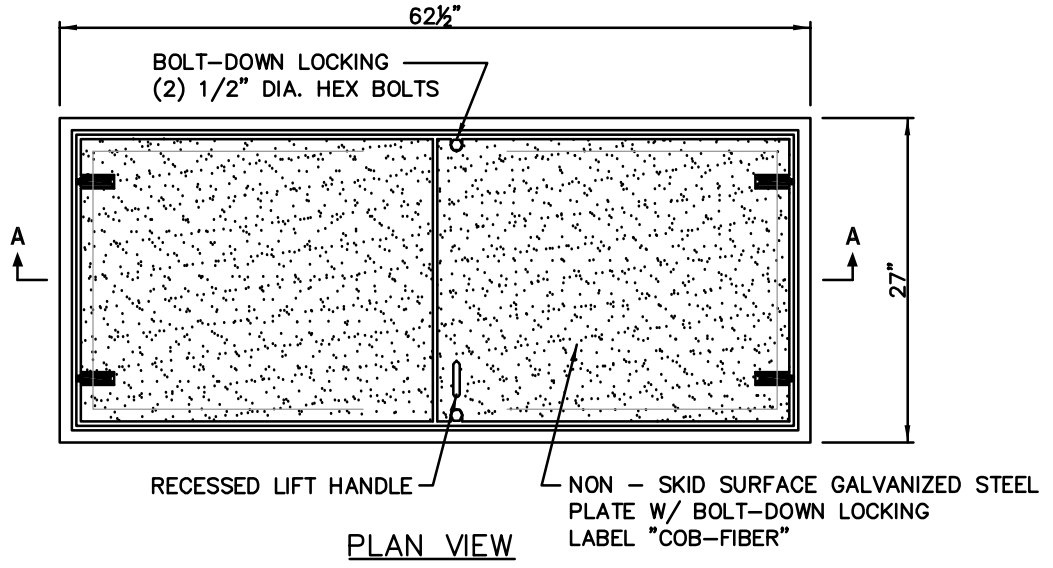


MODIFIED TYPE 2 JUNCTION BOX

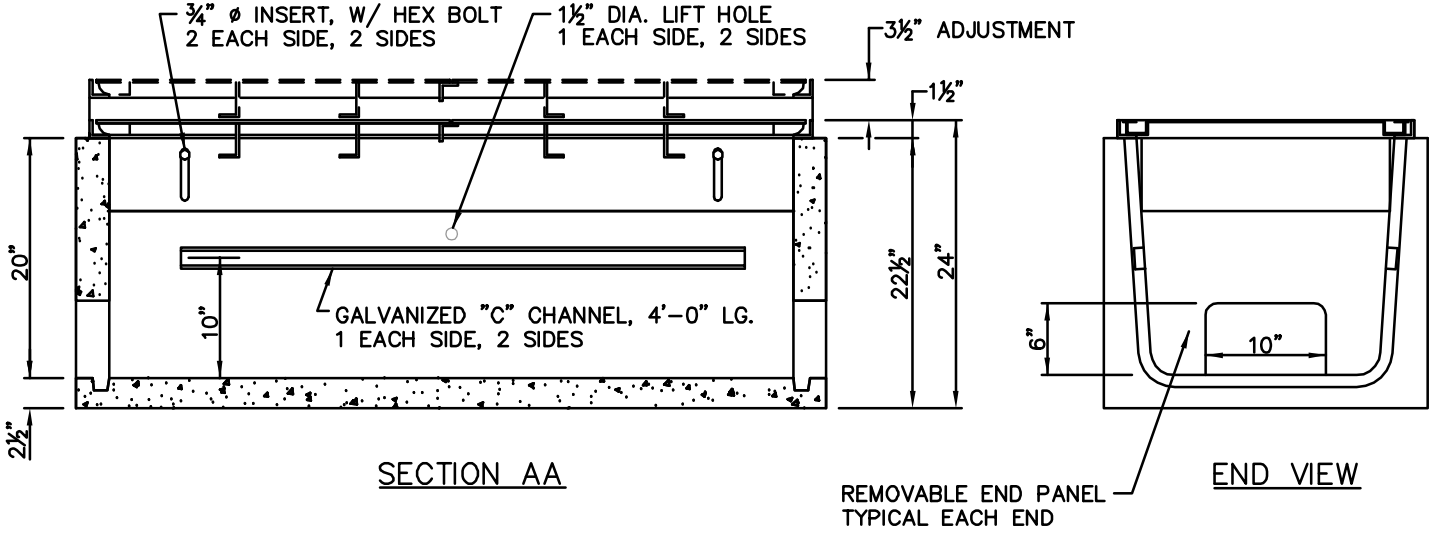
City of Bellevue

COMMUNICATION JUNCTION BOX DETAIL

DRAWING NUMBER	TSSL-7
SCALE	NONE
REVISION DATE	10/08
DEPARTMENT	TRANS



PLAN VIEW

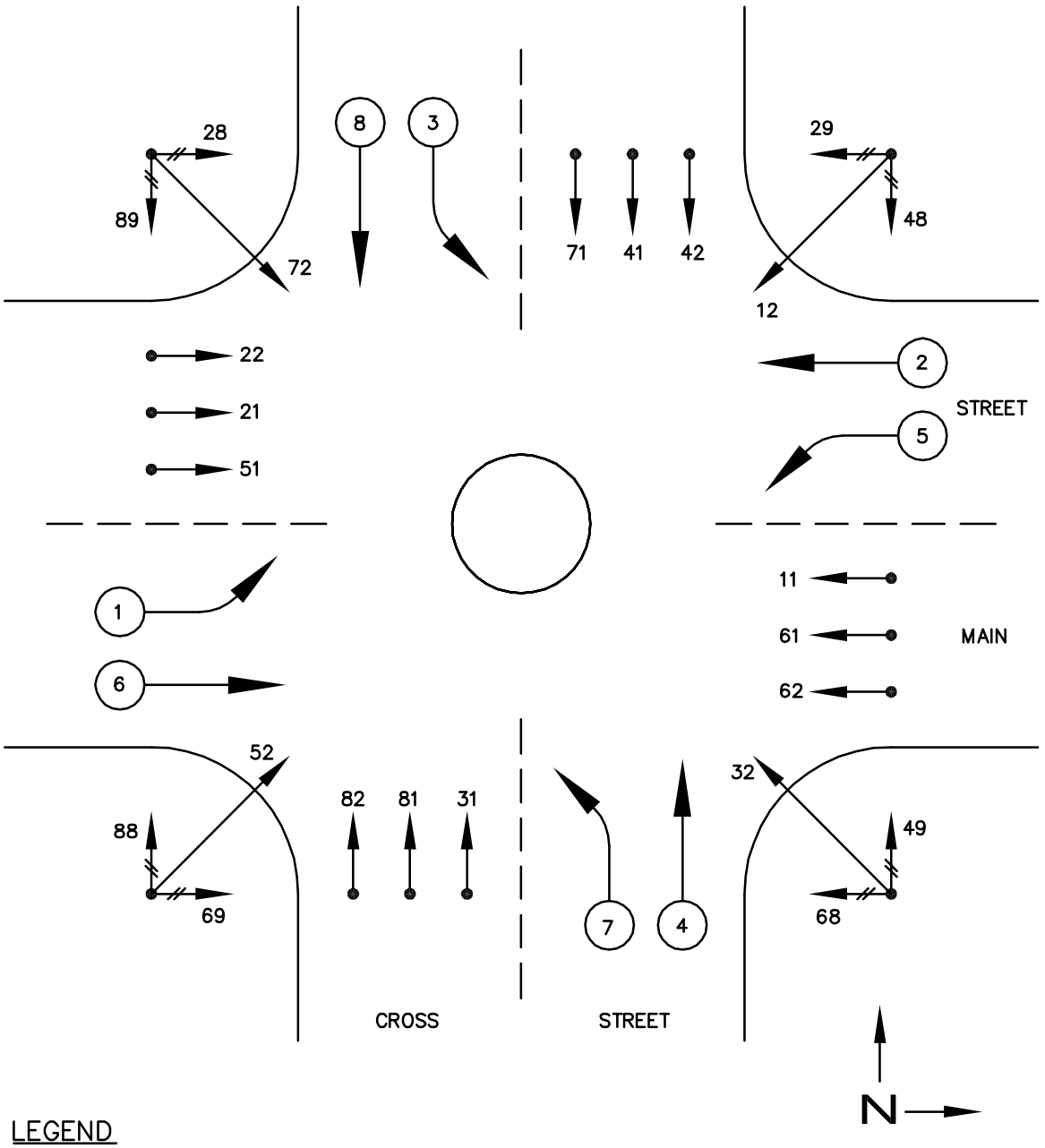


SECTION AA

END VIEW

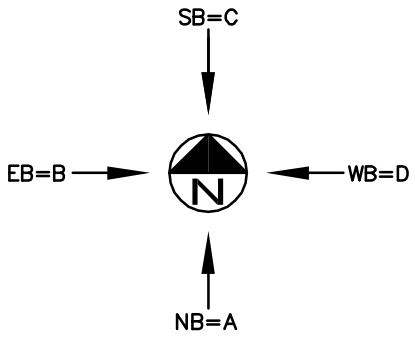
City of Bellevue	FIBER OPTIC VAULT

DRAWING NUMBER	TSSL–8
SCALE	NONE
REVISION DATE	10/08
DEPARTMENT	TRANS



LEGEND

- VEHICLE HEADS
- PEDESTRIAN HEADS
- (X) VEHICLE PHASE



PRE-EMPTION DETECTOR NUMBERING

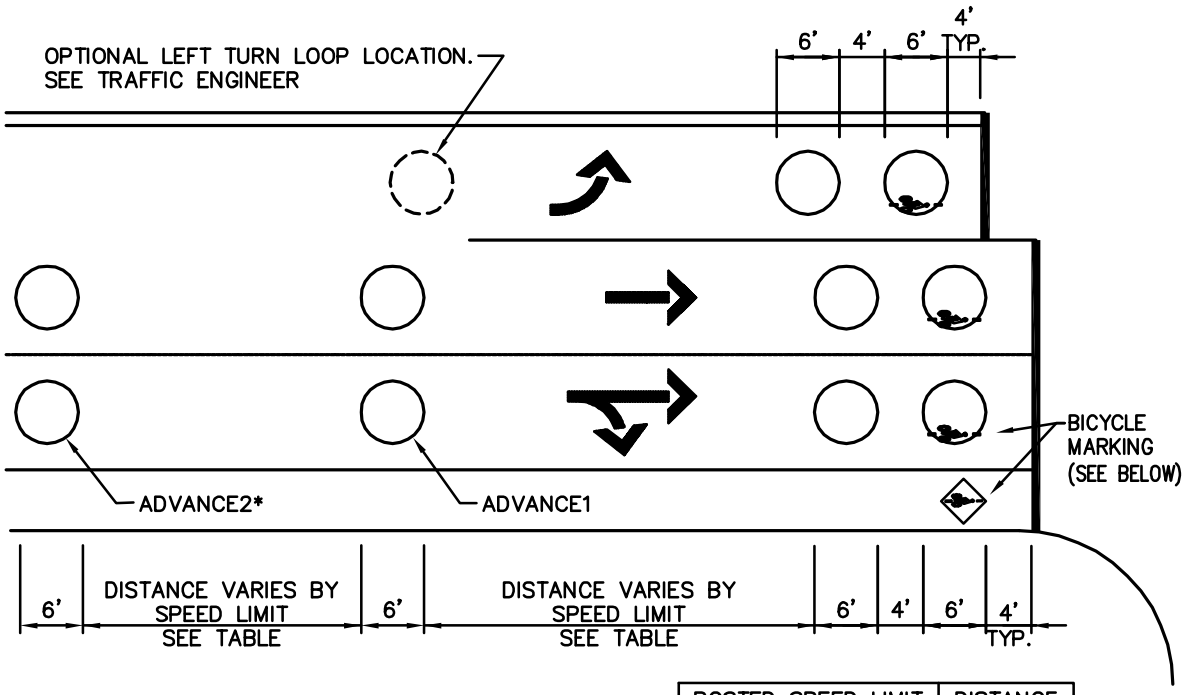
DRAWING NUMBER	TSSL-9	REVISION DATE	9/11
SCALE	NONE	DEPARTMENT	TRANS

STANDARD INTERSECTION MOVEMENTS AND HEAD NUMBERS

City of Bellevue

TYPICAL LOOP AND MARKING LAYOUT

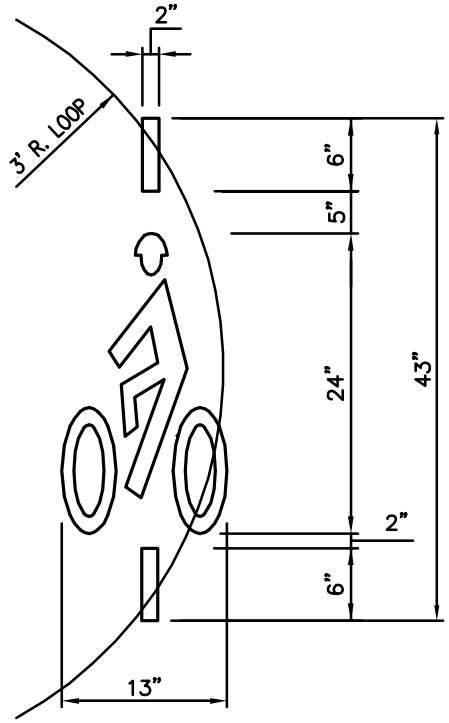
*USE ADVANCE2 ON HIGHER VOLUME STREETS.
SEE TRAFFIC ENGINEER FOR DIRECTION.



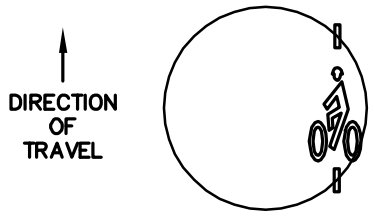
POSTED SPEED LIMIT	DISTANCE
25 MPH	73 FEET
30 MPH	88 FEET
35 MPH	103 FEET
40 MPH	120 FEET

LOOP DISTANCE TABLE

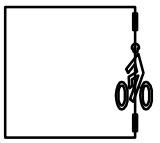
BICYCLE MARKING DETAILS



BICYCLE DETECTOR MARKING DETAIL



ROUND LOOP
(ALWAYS RIGHT SIDE)



SQUARE LOOP
(ALWAYS RIGHT SIDE)

BIKE LOOP
(ALWAYS CENTERED)

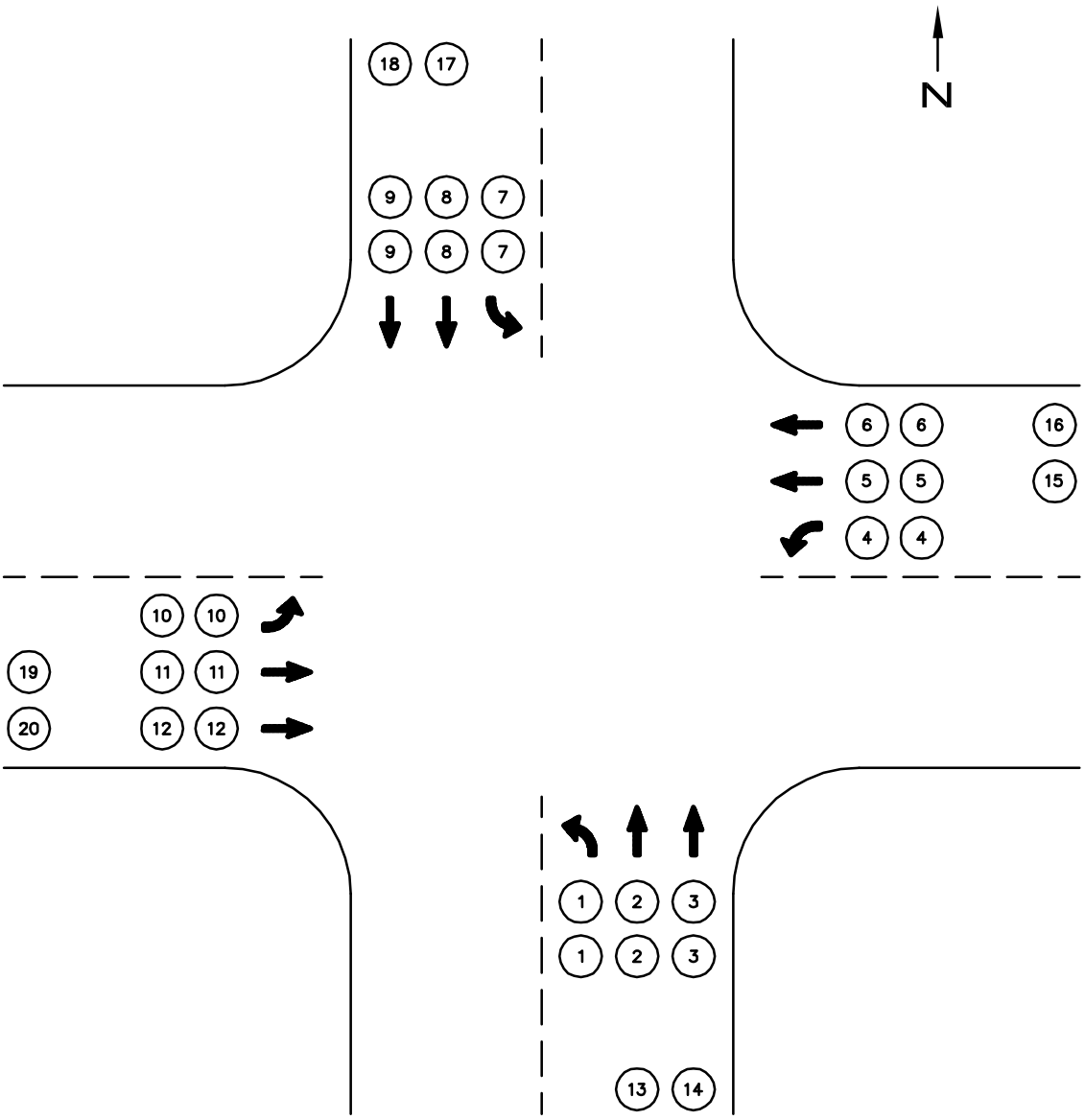
NOTES:

1. PRE MARK® PREFORMED THERMOPLASTIC, 90 mil, OR APPROVED EQUAL (PART NUMBER 89230577(+)HS).
2. MARKING SHALL AWAYS FACE LEFT AND HAVE A HELMET.
3. MARKING TYPICALLY NOT USED IN RIGHT ONLY LANES WHERE RIGHT ON RED IS ALLOWED.

DRAWING NUMBER	TSSL-10	REVISION DATE	01/14
SCALE	NONE	DEPARTMENT	TRANS

LOOP DETECTOR LAYOUT AND BICYCLE MARKING

City of Bellevue



LOOP NUMBERING SCHEME

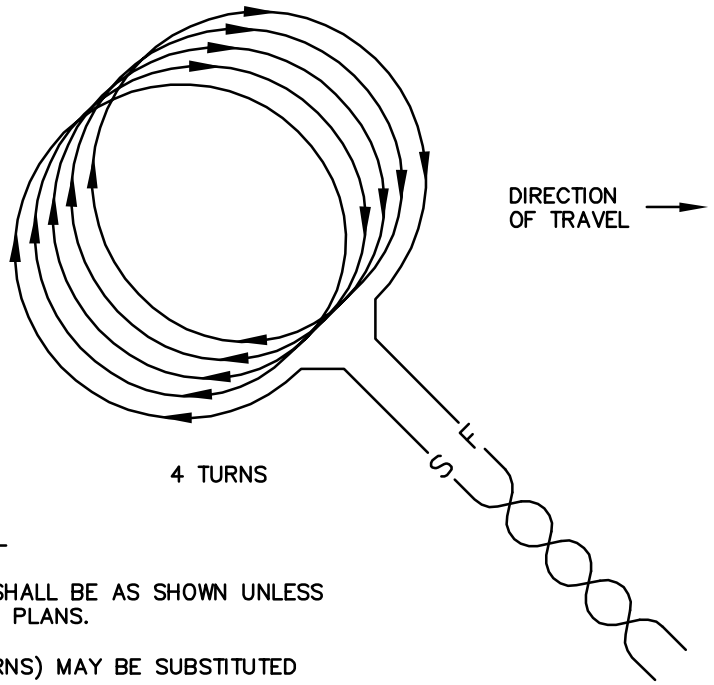
LOOP NUMBER 1 (TWO LOOPS) WILL BE THE STOP BAR LOOP ON THE INNER-MOST NORTHBOUND LANE STOP BAR. LOOPS ARE THEN NUMBERED COUNTER-CLOCKWISE AROUND THE INTERSECTIONS. THE NUMBERING CONTINUES WITH ADVANCED LOOPS, COUNTER-CLOCKWISE AROUND THE INTERSECTION.

DRAWING NUMBER	TSSL-11
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

LOOP NUMBERING SCHEME

City of Bellevue

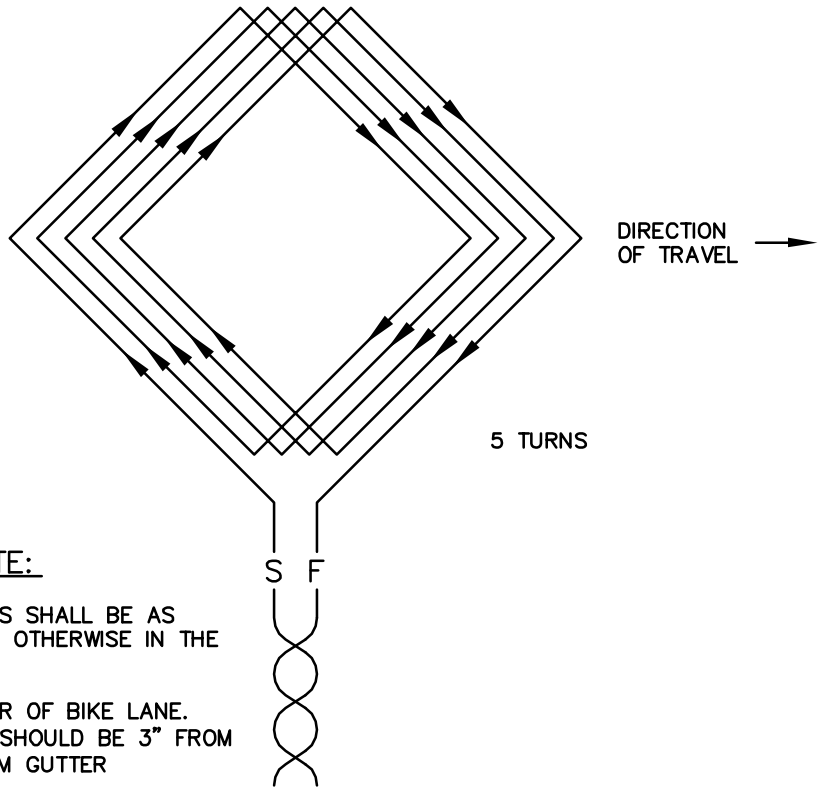
TYPICAL 6' ROUND VEHICLE LOOP WINDING



VEHICLE LOOP NOTE:

1. THE NUMBER OF TURNS SHALL BE AS SHOWN UNLESS NOTED OTHERWISE IN THE PLANS.
2. 6' SQUARE LOOPS (4 TURNS) MAY BE SUBSTITUTED FOR 6' ROUND LOOPS UPON APPROVAL BY THE ENGINEER.

TYPICAL 3'x3' BICYCLE LOOP WINDING



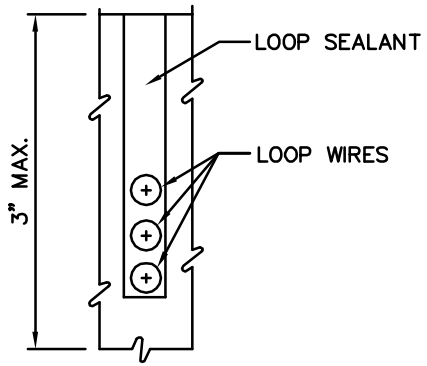
BICYCLE LOOP NOTE:

1. THE NUMBER OF TURNS SHALL BE AS SHOWN UNLESS NOTED OTHERWISE IN THE PLANS.
2. PLACE LOOP IN CENTER OF BIKE LANE. OUTSIDE LOOP EDGES SHOULD BE 3" FROM EDGELINE AND 3" FROM GUTTER

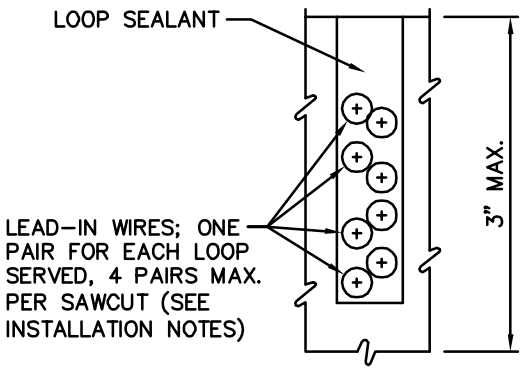
DRAWING NUMBER	TSSL-12
SCALE	NONE
REVISION DATE	10/12
DEPARTMENT	TRANS

LOOP WINDING DETAILS

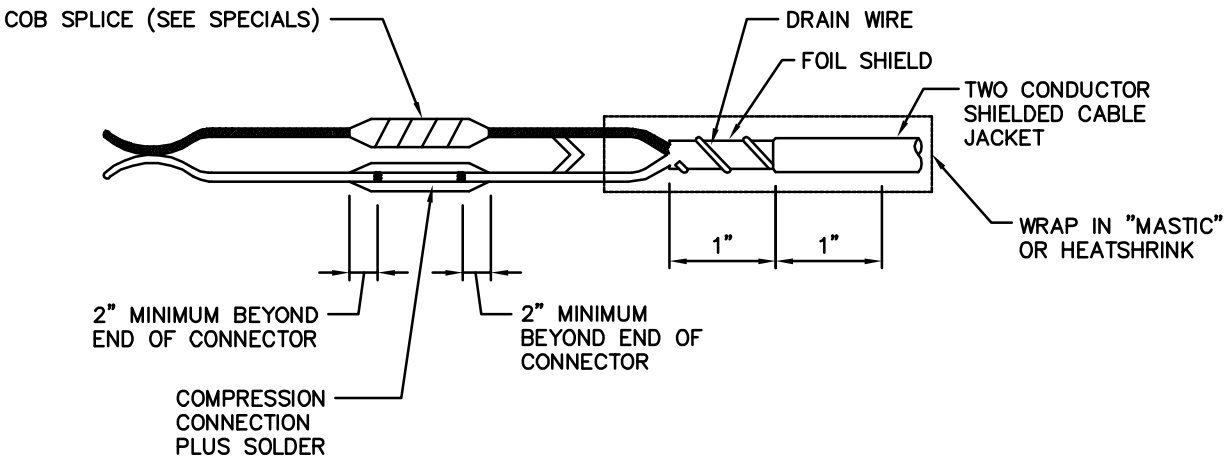
City of Bellevue



1/4" LOOP SAWCUT CROSS-SECTION



1/2" LEAD-IN SAWCUT CROSS-SECTION

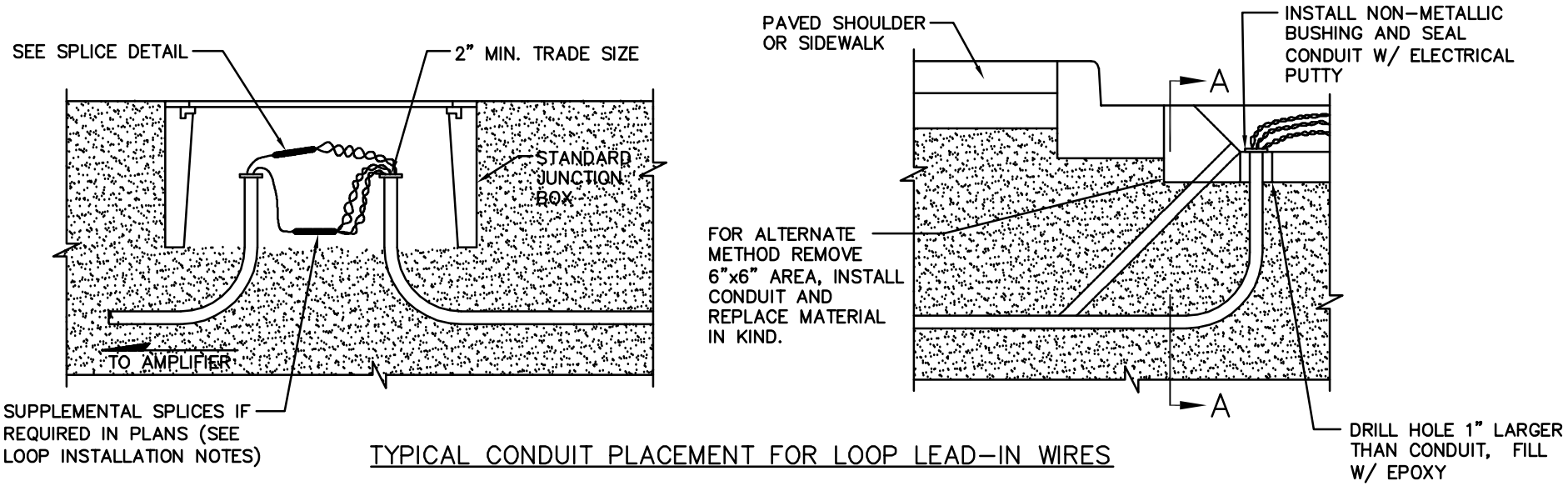


LOOP SPLICE

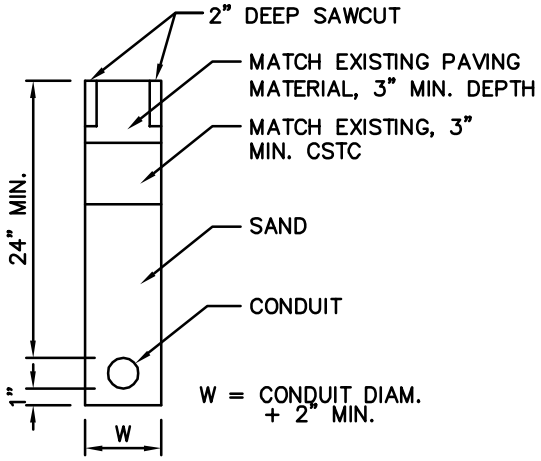
City of Bellevue

LOOP DETECTOR DETAIL

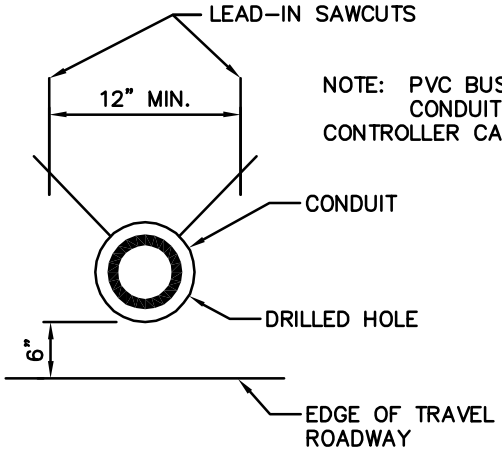
DRAWING NUMBER	TSSL-13
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS



TYPICAL CONDUIT PLACEMENT FOR LOOP LEAD-IN WIRES



SECTION A-A



LEAD-IN SAWCUTS AND CONDUIT PLACEMENT DETAIL

City of Bellevue

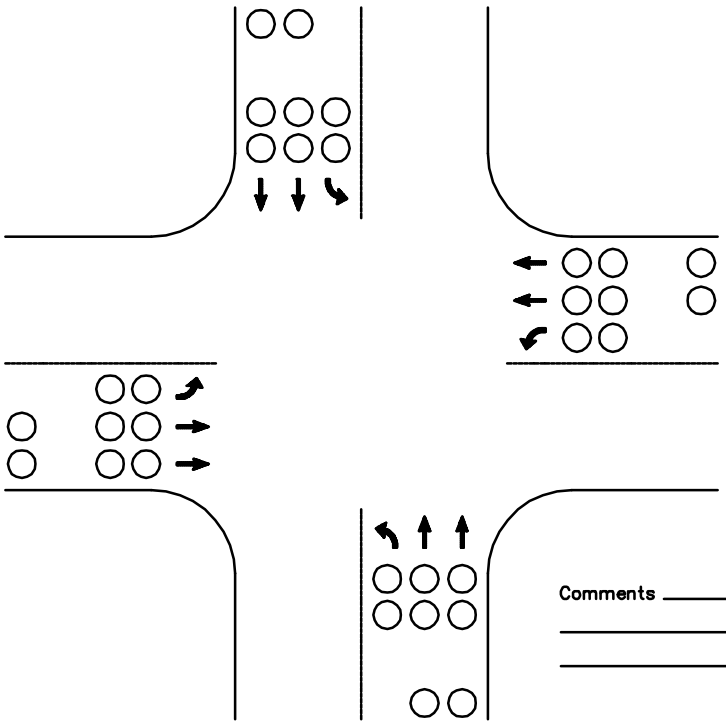
TYPICAL CONDUIT PLACEMENT FOR LOOP DETECTORS

DRAWING NUMBER	TSSL-14
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

INDUCTION LOOP TEST RESULTS

Location _____ Date _____

Tested By _____ Verified By _____



Comments _____

TEST RESULTS						TEST RESULTS					
Loop #	Inductance	Meggar Reading	Loop #	Inductance	Meggar Reading	Loop #	Inductance	Meggar Reading	Loop #	Inductance	Meggar Reading

DRAWING NUMBER	TSSL-15
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

INDUCTION LOOP TEST

City of Bellevue

CITY OF BELLEVUE
FIELD WIRING CHART

DRAWING NUMBER	TSSL-16
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

Detector Number

Emergency Pre-empt		1-NB	2-EB	3-SB	4-WB
Main Detection	(Org)	511	521	531	541
	(Yellow)	512	522	532	542
	(Blue)	513	523	533	543
Advance Detection	(Org)	511	521	531	541
	(Yellow)	A1	B1	C1	D1
	(Blue)	513	523	533	543
	(Org)	511	521	531	541
	(Yellow)	A2	B2	C2	D2
	(Blue)	513	523	533	543

Service Connection

AC+ Input	AC+
AC- Input	AC-
Equipment Ground	EQ GND

Phase Number / Overlap

Vehicle Heads		1	2	3	4	5	6	7	8		A	B	C	D
Red Ball	R	611	621	631	641	651	661	671	681	R	6A1	6B1	6C1	6D1
Amber Ball	O	612	622	632	642	652	662	672	682	O	6A2	6B2	6C2	6D2
Green Ball	G	613	623	633	643	653	663	673	683	G	6A3	6B3	6C3	6D3
AC-	W	616	626	636	646	656	666	676	686	W	6A6	6B6	6C6	6D6
Spare/FYA	BLK	615	625	635	645	655	665	675	685	BLK	6A5	6B5	6C5	6D5

Pedestrian Heads & Dets.	2	4	6	8	
Don't Walk	721	741	761	781	R
Walk	722	742	762	782	G
AC-	723	743	763	783	W
Detection	724	744	764	784	O
Common-Detection	725	745	765	785	BLK

Vehicle Detection

Loop Channel 1 (a)	B	11	21	25	31	41	45	51	61	65	71	81	85
Loop Channel 1 (b)	W	11	21	25	31	41	45	51	61	65	71	81	85
Loop Channel 2 (a)	B	12	22	26	32	42	46	52	62	66	72	82	86
Loop Channel 2 (b)	W	12	22	26	32	42	46	52	62	66	72	82	86
Loop Channel 3 (a)	B	13	23	27	33	43	47	53	63	67	73	83	87
Loop Channel 3 (b)	W	13	23	27	33	43	47	53	63	67	73	83	87
Loop Channel 4 (a)	B	14	24	28	34	44	48	54	64	68	74	84	88
Loop Channel 4 (b)	W	14	24	28	34	44	48	54	64	68	74	84	88

FIELD WIRING CHART

City of Bellevue

DELETED AS OF FEBRUARY 12, 2014

City of Bellevue

LOOP CONNECTION SCHEMATIC SUPPLEMENT TO FIELD WIRING CHART

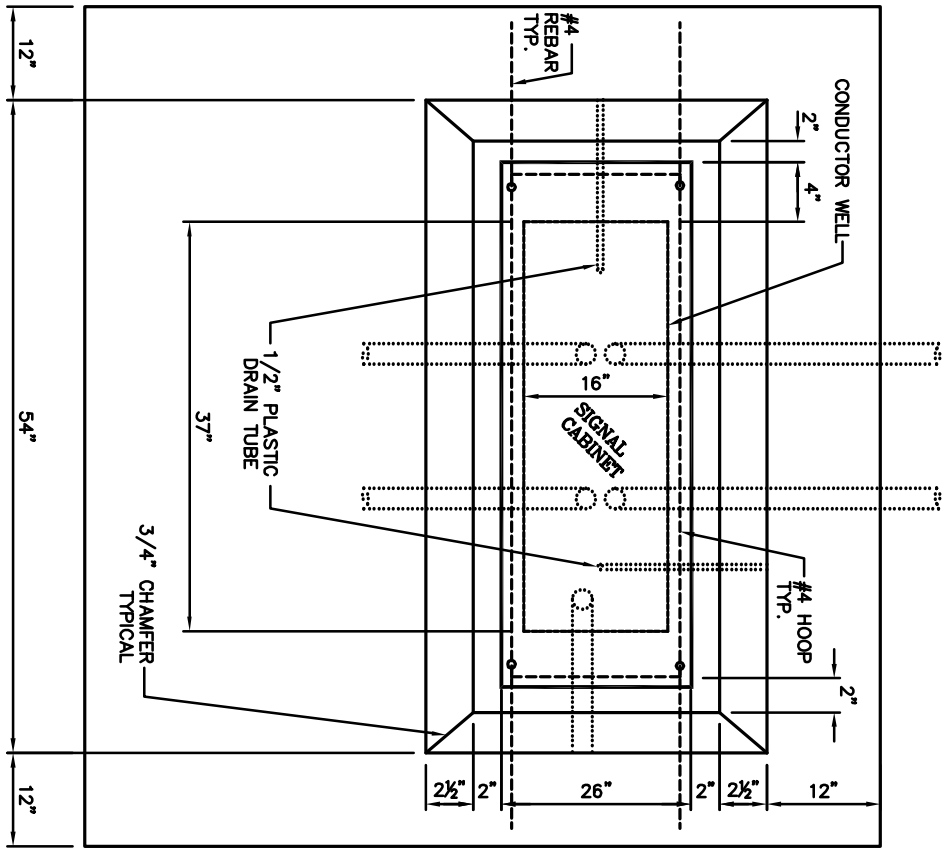
DRAWING NUMBER	TSSL-17
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

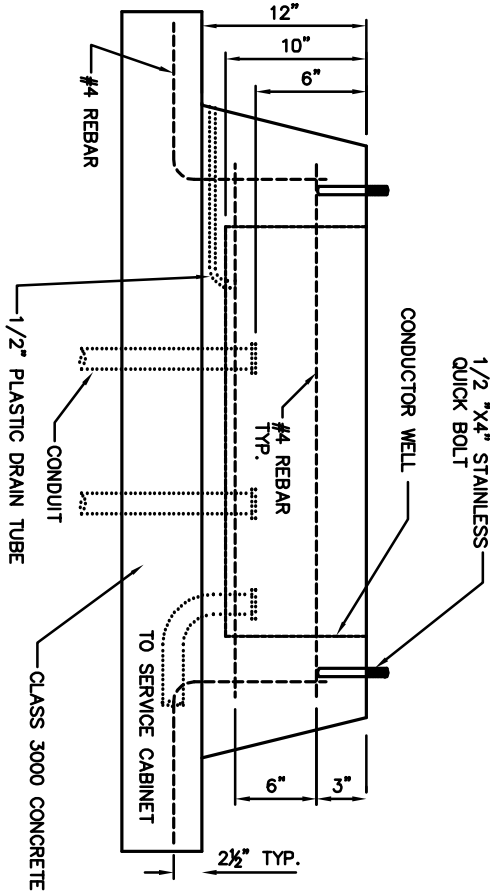
DELETED AS OF FEBRUARY 12, 2014

City of Bellevue

SIGNAL STANDARD FOUNDATION DETAIL

DRAWING NUMBER	TSSL-18
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS





*NOTE: CONTRACTOR TO VERIFY BOLT PATTERN WITH CABINET

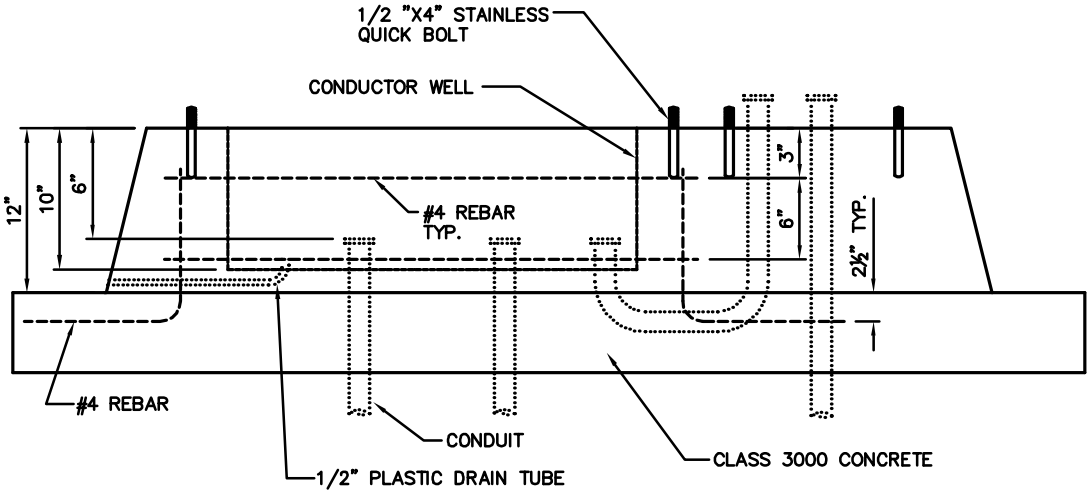
NEMA CONTROLLER CABINET FOUNDATION DETAIL

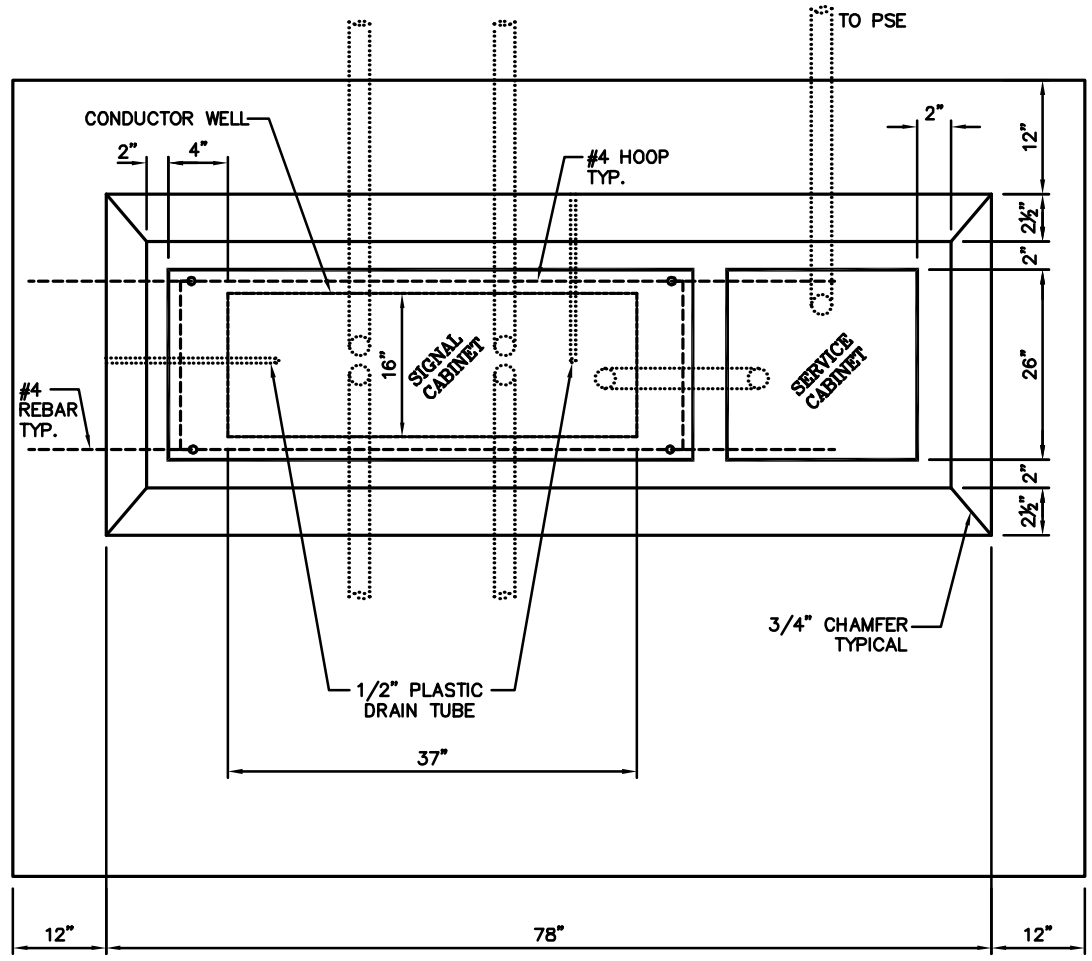
City of Bellevue

SIGNAL CABINET FOUNDATION DETAIL

DRAWING NUMBER	TSSL-19
SCALE	NONE
REVISION DATE	10/08
DEPARTMENT	TRANS

DRAWING NUMBER	TSSL-20
SCALE	NONE
REVISION DATE	10/08
DEPARTMENT	TRANS



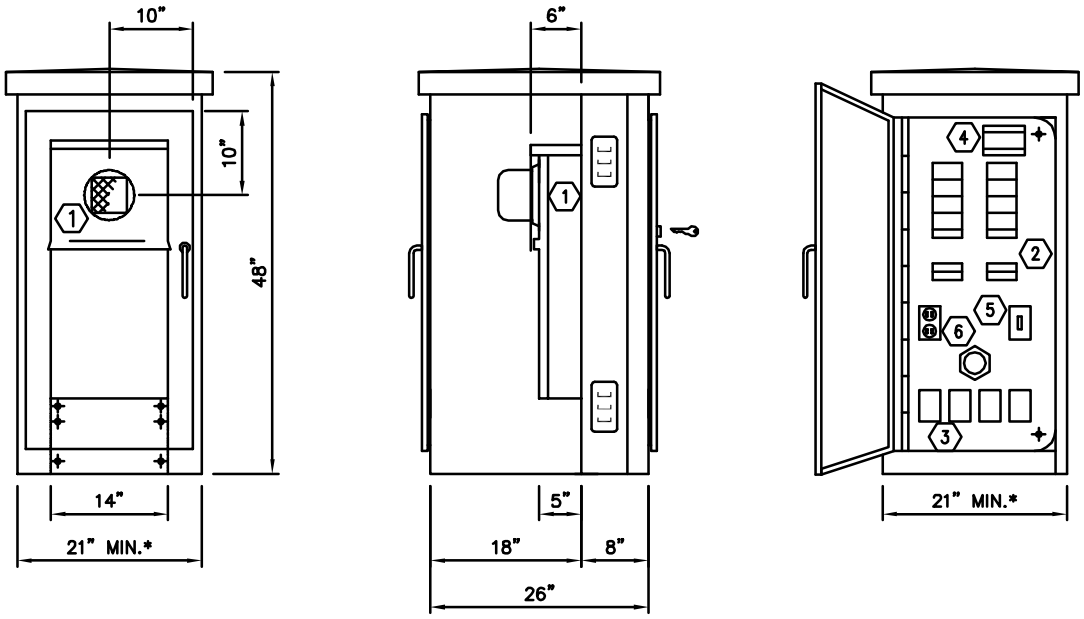


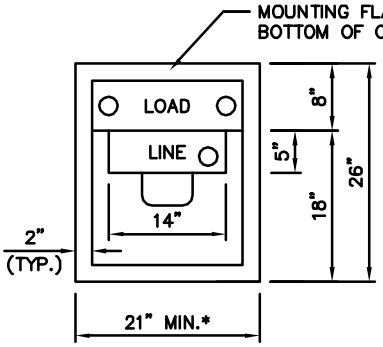
*NOTE: CONTRACTOR TO VERIFY BOLT PATTERN WITH CABINETS

NEMA CONTROLLER CABINET AND SERVICE CABINET FOUNDATION DETAIL

SIGNAL AND SERVICE CABINET FOUNDATION DETAIL

City of Bellevue





FOOTPRINT

CITY OF BELLEVUE

SERVICE CABINET FOR STREET AND TRAFFIC SIGNAL

COMPONENT SCHEDULE

(1) METERBASE: 200 AMP SAFETY SOCKET, 5th JAW INSTALLED AT 9:00 POSITION

(2) PANELBOARD: 120/240 VAC, 225 AMP COPPER BUS, 1 PHASE, 3 WIRE, SPLIT BUS, COPPER BUS, 22 KAIC BREAKERS
SIGNAL SECTION: MLO, 4CKT, 1-30/1 SIGNAL BRANCH
ILLUMINATION SECTION: MAIN BREAKER, 100 AMP, 2 POLE
4-30/2 STREET ILLUMINATION BRANCH
1-15/1 CONTROL CKT BRANCH
1-20/1 GROUND FAULT RECEPTACLE BRANCH

(3) CONTACTORS: LIGHTING RATED, 120 VAC COIL, 4-REQUIRED FOR STREET LIGHTING AT 30 AMP, 2 POLE

(4) TERMINAL BLOCK TO REMOTE PHOTO CELL (FOR CONTROL OF STREET LIGHTING)

(5) PHOTO-CELL BYPASS SWITCH, SPST, 15 AMP, 277 VAC

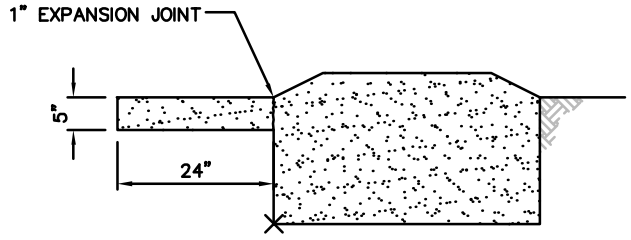
(6) GROUND FAULT RECEPTACLE: 20 AMP, 120 VAC, DUPLEX

CABINET: NEMA 3R, PADMOUNT, 2 SCREENED, AND GASKETTED VENTS

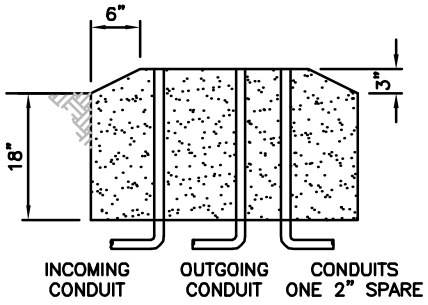
DOORS: HEAVY DUTY STAINLESS STEEL HINGES (LIFT-OFF TYPE), 3 POINT LATCHES, STAINLESS STEEL VAULT HANDLES, "BEST" LOCK ON DISTRIBUTION DOOR, PADLOCKABLE METER DOOR WITH POLISHED WIRE GLASS WINDOW CLOSED CELL NEOPRENE GASKET, CARD HOLDER

FINISH: POLYESTER POWDER COAT, ZINC PRIME, ASA 61 GRAY INSIDE AND OUT

* SEE CABINET MANUFACTURER FOR ACTUAL SIZE (21" OR 22")



SIDE



BACK

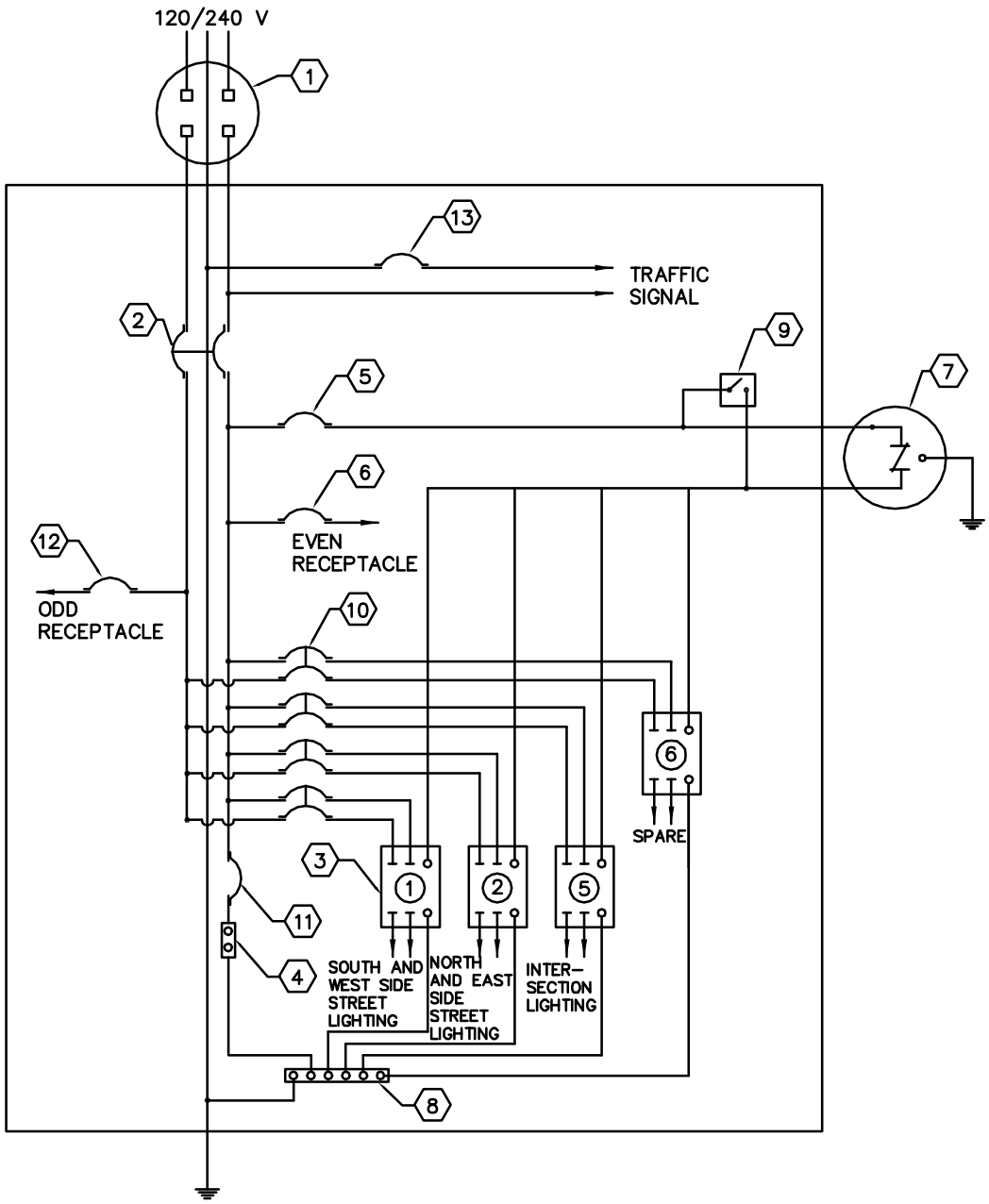
FOUNDATIONS

ANCHOR BOLTS AND DATA FOR SPACING TO BE SUPPLIED BY CABINET MANUFACTURER

DRAWING NUMBER	TSSL-21
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

SERVICE CABINET DETAIL

City of Bellevue



SERVICE CABINET WIRING

ELECTRICAL SERVICE LEGEND:

1. METER
2. MAIN BREAKER (100 AMP.)
3. CONTACTORS (30 AMP.)
4. 120 V GFCI RECEPTACLE
5. CONTROL BREAKER (15 AMP.)
6. RECEPTACLE BREAKER – EVEN (20 AMP.)
7. PHOTOCELL
8. NEUTRAL BUS
9. TEST SWITCH (15 AMP.)
10. SERVICE BREAKER (30 AMP.)
11. GFCI BREAKER (20 AMP.)
12. RECEPTACLE BREAKER – ODD (20 AMP.)
13. SIGNAL BREAKER (30 AMP.)

DRAWING NUMBER	TSSL-22
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

SERVICE CABINET WIRING DETAIL

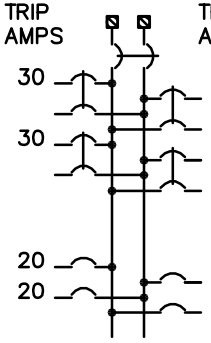
City of Bellevue

SOUTH AND WEST SIDE LIGHTING ARE ODD # LIGHTS & CONNECTED TO CONTACTOR #1
NORTH AND EAST SIDE LIGHTING ARE EVEN # LIGHTS & CONNECTED TO CONTACTOR #2

PANEL SCHEDULE

NO.	LOCATION		
S	LOCATION: PEDESTAL PANEL SERVING: STREET LIGHTS, ETC.	120/240 VOLTS 1 PHASE 3 WIRE 100 AMP with MAIN BREAKER	

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	ODD # STREET LIGHTS		30	30		EVEN # STREET LIGHTS	2
5	INTERSECTION		30	30		SPARE/FUTURE	6
9	SPACE					SPACE	10
13	DUPLEX RECEPTACLE ODD # SL		20	20		DUPLEX RECEPTACLE EVEN # SL	14
15	GFCI		20	15		LIGHTING CONTROL	16

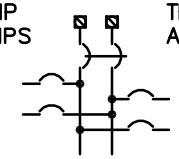


REMARKS:	CONNECTED LOAD:	KVA	AMPS
	DEMAND LOAD:	KVA	AMPS

PANEL SCHEDULE

NO.	LOCATION		
T	LOCATION: PEDESTAL PANEL SERVING: TRAFFIC SIGNAL CONTROL	120/240 VOLTS 1 PHASE 3 WIRE 100 AMP with MAIN LUGS ONLY	

CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	SPARE/FUTURE						
3	SPACE			30		TRAFFIC SIGNAL CONTROL	2
						SPACE	4

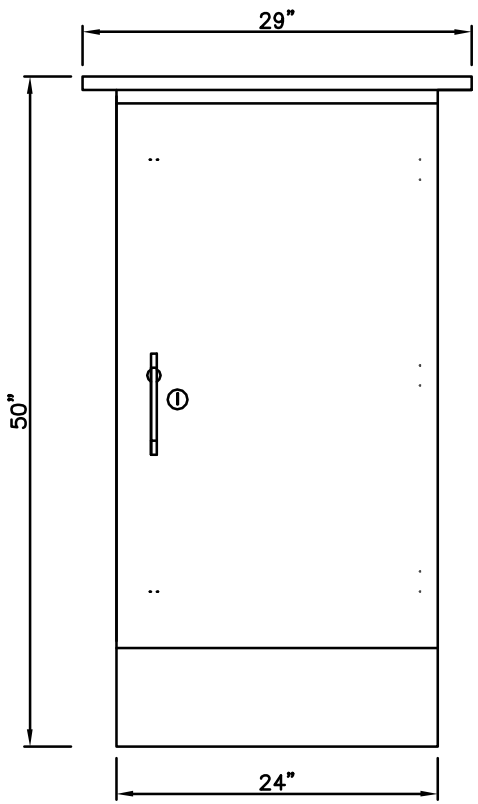


REMARKS:	CONNECTED LOAD:	KVA	AMPS
	DEMAND LOAD:	KVA	AMPS

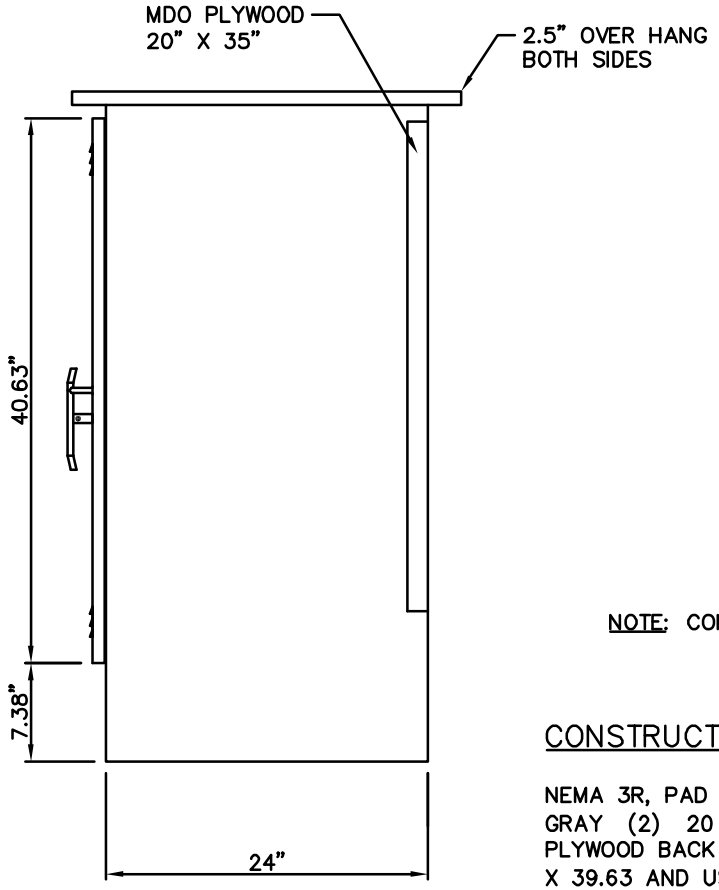
City of Bellevue

PANEL SCHEDULE

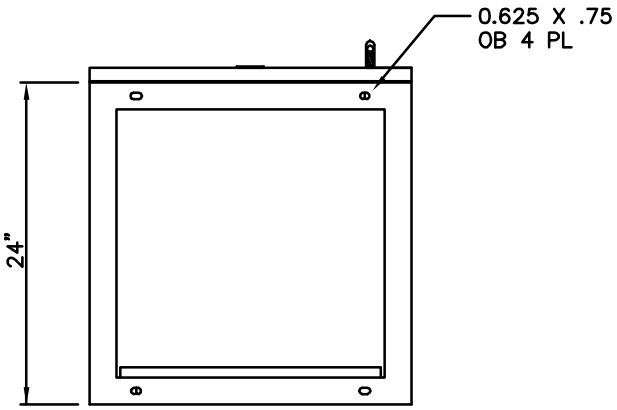
DRAWING NUMBER	TSSL-23
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS



FRONT VIEW



SIDE VIEW



TOP VIEW

NOTE: CONTRACTOR TO VERIFY BOLT PATTERN WITH CABINET.

CONSTRUCTION NOTES:

NEMA 3R, PAD MOUNT, 1/8" ALUMINUM, POWDERCOATED ASA 61 GRAY (2) 20 X 35 X 1/2" MDO (MEDIUM DENSITY OVERLAID) PLYWOOD BACK BOARD. DOOR HAS AN APPROXIMATE OPENING OF 21 X 39.63 AND USES LIFT OFF CONCEALED HINGES WITH "BEST" LOCK ON DOOR AND 3 POINT LATCH SYSTEM, SEALED BY A CLOSED CELL NEOPRENE GASKET.

City of Bellevue

FIBER OPTIC CABINET

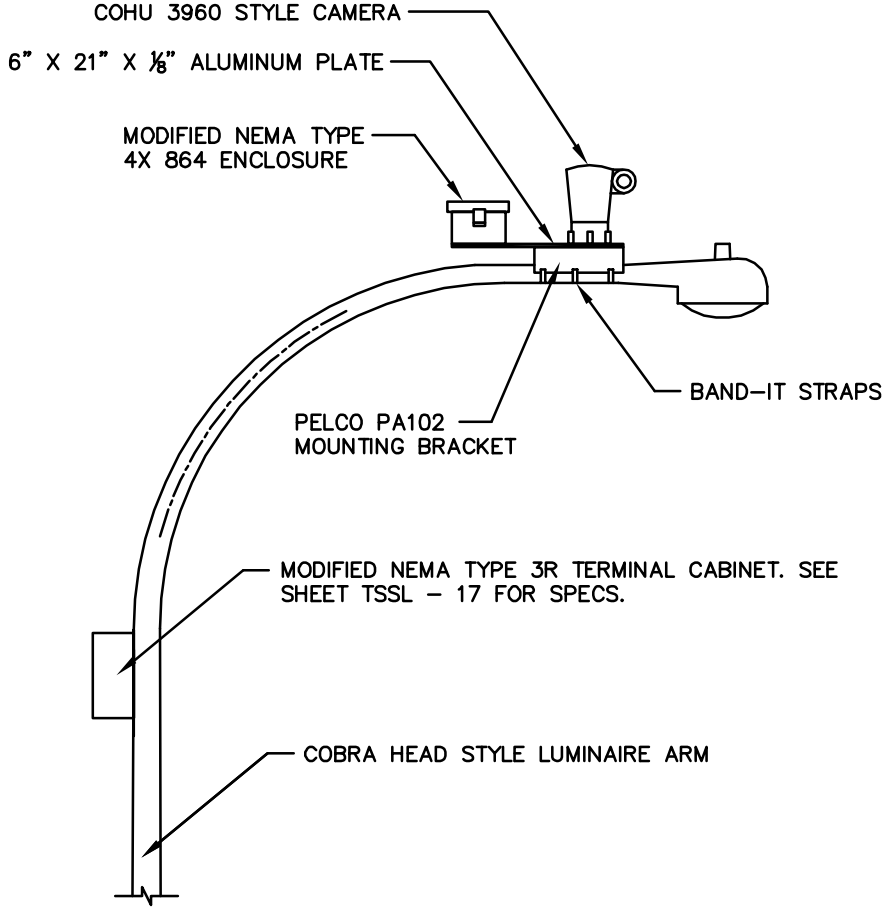
DRAWING NUMBER	TSSL-24
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS

DELETED AS OF FEBRUARY 12, 2014

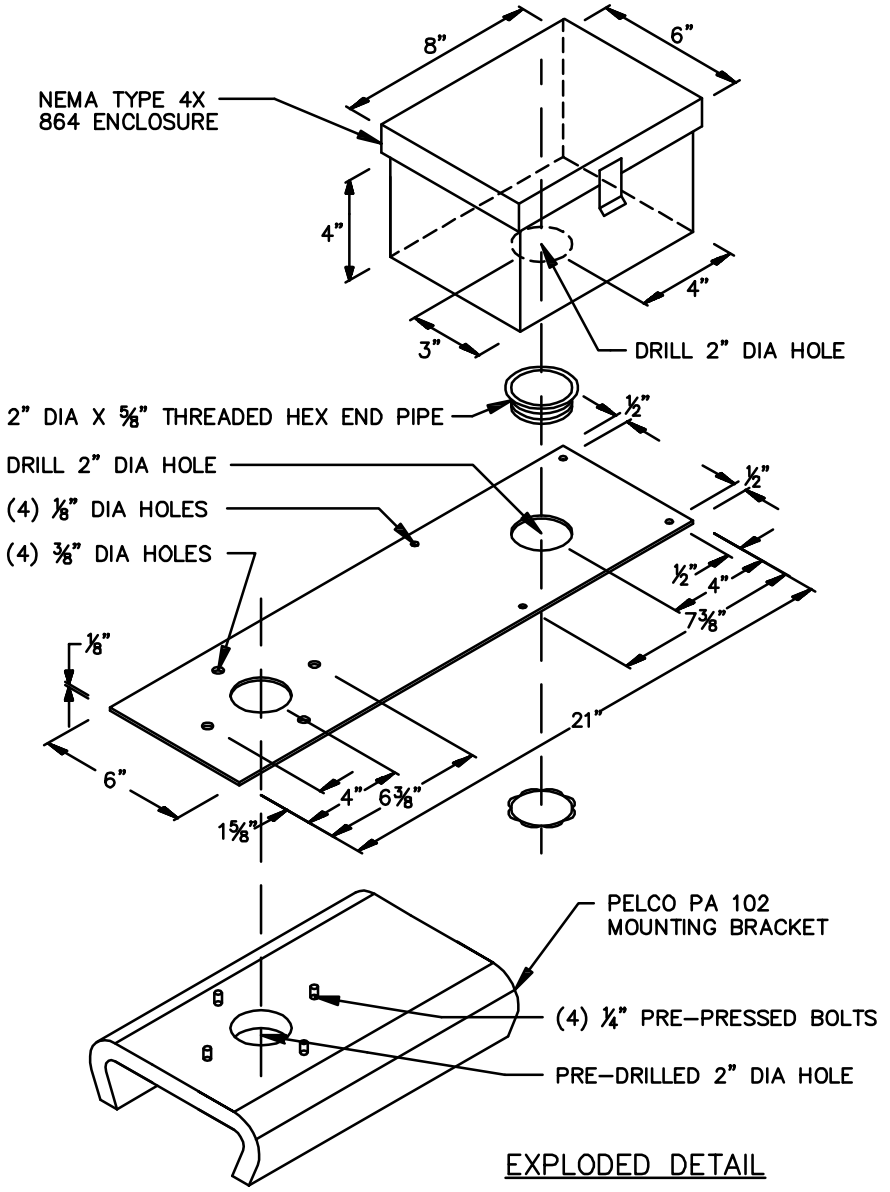
City of Bellevue

INTERCONNECT CABLE TERMINATION CABINET

DRAWING NUMBER	TSSL-25
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS



TYPICAL LUMINAIRE ARM MOUNT

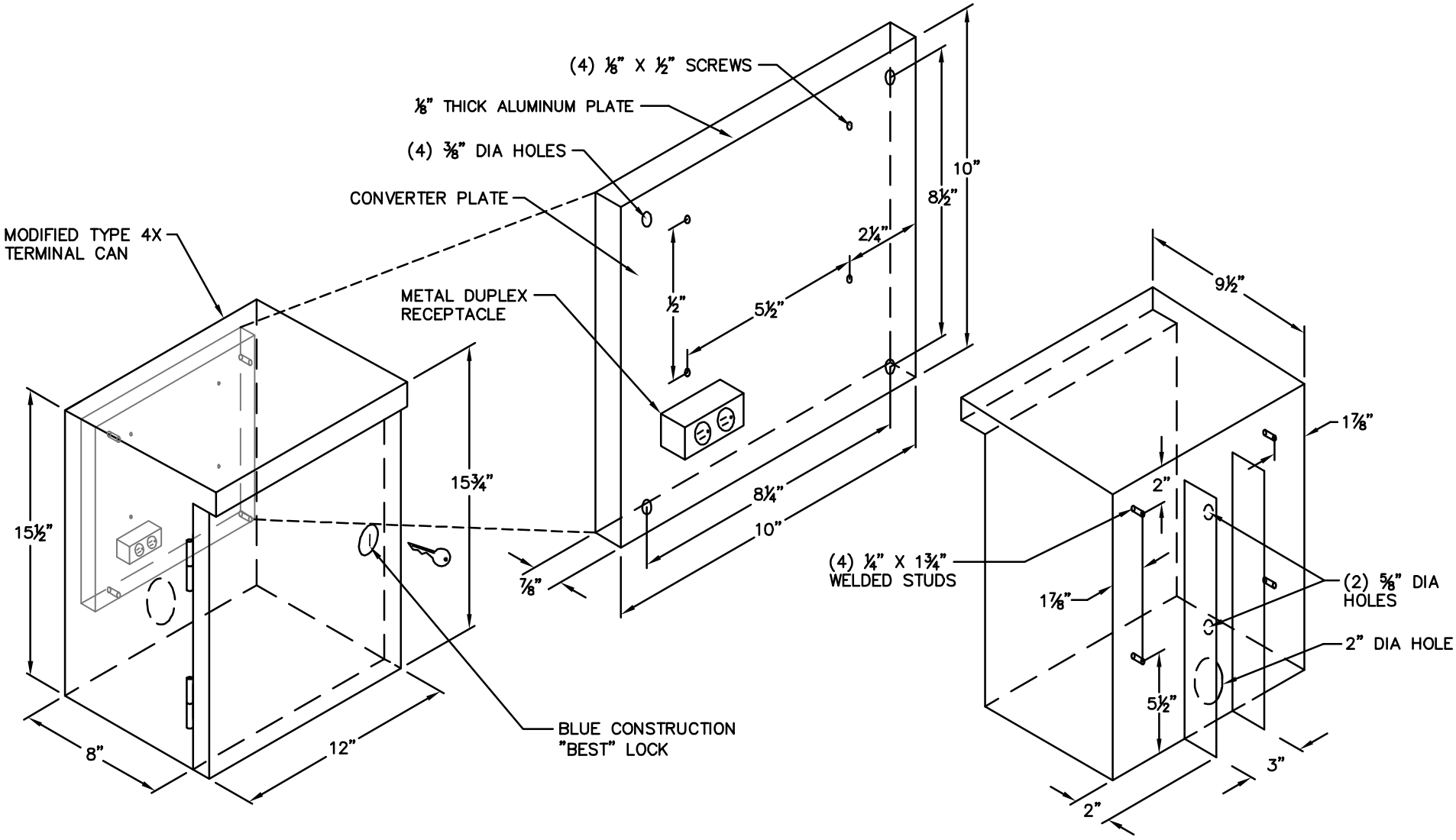


EXPLODED DETAIL

City of Bellevue

COHU VIDEO CAMERA MOUNT - LUMINAIRE ARM DETAIL

DRAWING NUMBER	TSSL-26
SCALE	NONE
REVISION DATE	11/12
DEPARTMENT	TRANS



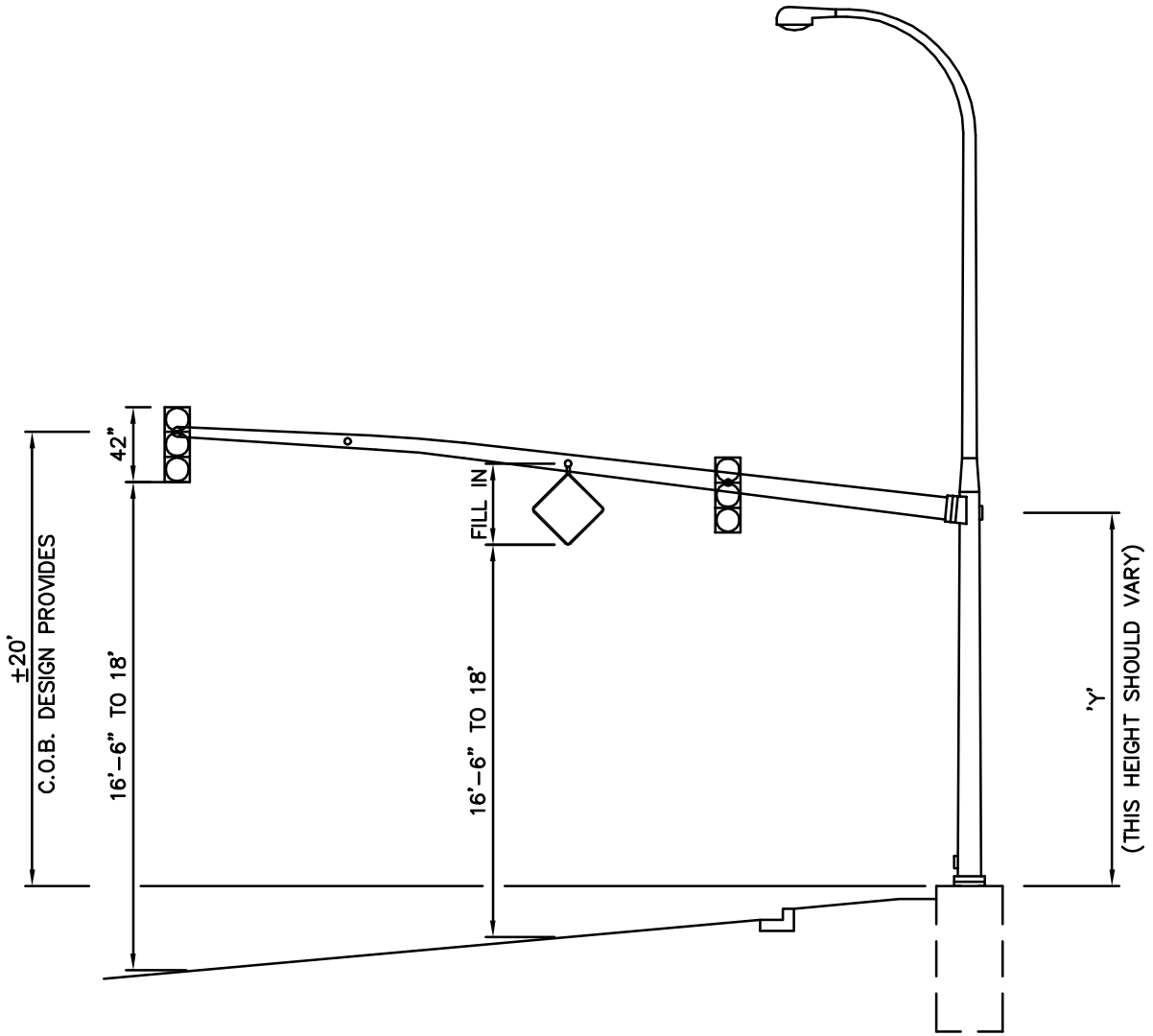
FRONT VIEW

BACK VIEW

City of Bellevue

VIDEO CONVERTER CABINET DETAIL

DRAWING NUMBER	TSSL-27
SCALE	NONE
REVISION DATE	10/08
DEPARTMENT	TRANS



City of Bellevue

SIGNAL HEAD CLEARANCE DETAIL

DRAWING NUMBER	TSSL-28
SCALE	NONE
REVISION DATE	10/08
DEPARTMENT	TRANS

DELETED AS OF FEBRUARY 12, 2014

City of Bellevue

TYPICAL ACCESSIBLE PEDESTRIAN SIGNAL DEVICE LOCATIONS
(TYPE 1 RAMPS)

DRAWING NUMBER	TSSL-29
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

DELETED AS OF FEBRUARY 12, 2014

City of Bellevue

TYPICAL ACCESSIBLE PEDESTRIAN SIGNAL DEVICE LOCATIONS
(TYPE 2 RAMPS)

DRAWING NUMBER	TSSL-30
SCALE	NONE
REVISION DATE	01/14
DEPARTMENT	TRANS

A P P E N D I X A

Street Lighting Design Guide

Revised February 12, 2014


CITY OF BELLEVUE
WASHINGTON

I. GENERAL

The street lighting system should be a complete, unified design that addresses the various mobility needs within the City of Bellevue. Lighting levels should be appropriate for street function, classification, and pedestrian use. The lighting system should also have a pleasing appearance and complement surrounding features.

It is not practical, economically feasible, nor desirable to complete the illumination system for the entire City at one time. Development and road construction projects are constantly changing city streets. When consistent design criteria are applied to each project, an effective and functional overall lighting system can be established.

The City must maintain a consistent style, operational mode, and maintenance program in order to keep the overall lighting system manageable. This Street Lighting Design Guide has been prepared to assist the city, developers, and anyone involved in improvements to accomplish this objective.

II. SUBMITTAL REQUIREMENTS

A complete submittal (Plans, Specifications, and Supporting Calculations) for a proposed street lighting system must include plans showing equipment locations and details, a signed specifications title page with project specifications, and illumination & line loss calculations. Plans must be prepared by a Washington State licensed engineer experienced in roadway illumination. Proposed deviations to standard practice should be discussed and agreed upon with the review engineer prior to submittal and must be explained in a submittal letter.

The submittal shall show the proposed locations of all landscaping. The design of the street lighting system shall be such that no street trees are placed within 25 feet of a new street light.

The designer should contact the project owner to verify final building layout and the location of windows that could be affected by the location of the required street light poles and luminaires. Consideration should be given to windows when locating poles and deciding on pole heights to minimize impacts to adjacent buildings. If light poles are proposed near windows, house-side shields should be utilized and reflected in the design calculations.

There are a number of streets that require special decorative lighting in addition to the standard street lighting systems. These locations are defined in the Bellevue Land Use Code and in Conceptual Design Plans, Non-Arterial Streets in Bellevue Central Business District, available from the Transportation Department.

A. Plans

All plans for street lighting improvements must be provided on 22" x 34" sheets. The preferred scale is 1" = 20'; the minimum acceptable scale is 1" = 40'. These plans must show the new luminaires, their stations, installation details, landscaping or street trees, building awnings, and overhangs. The plans must also show any adjacent existing luminaires (and future luminaires when applicable) and existing junction boxes as necessary to show the complete electrical system. Plans must be signed and sealed by a Professional Engineer licensed in the state of Washington.

Typical lighting details are included in the Transportation Department *Design Manual*, Standard Drawings. The engineer should use these as a guide in preparing project-specific plan details. The street lighting plans should include details of the service cabinet or connections to existing service cabinet, conduit locations, and wire notes including a connection to Puget Sound Energy if necessary.

B. Specifications

The City of Bellevue uses the *Standard Specifications for Road, Bridge, and Municipal Construction* as published by the Washington State Department of Transportation and modified by the City of Bellevue *Special Provisions*. A disk is available containing the current program to select City of Bellevue *Special Provisions* for your specific project.

C. Supporting Calculations

Street lighting is to be designed using the illuminance method for calculations, and the design should be completed using AGI32 software. Digital design files from AGI32 are to be provided to the city for all designs, along with line loss calculations for the system.

III. DESIGN PARAMETERS

A. Fixtures and Poles

Only certain fixture types will be accepted for use in Bellevue (see Table 1 below) because replacement fixtures must conform to the photometrics of the original design, and the City can keep in stock only a limited assortment of replacement fixtures.

Light-Emitting Diode (LED) street lighting systems are now commonly used in new and retrofit lighting applications in the city because they offer uniform and effective lighting while consuming less energy. The designer shall work closely with the Traffic Engineer to establish if high pressure sodium (HPS) or LED luminaires are to be used in the design, as well as determining other design parameters such as pole type, arm style, mounting height, and photometric files to be used.

TABLE 1: APPROVED FIXTURES AND USEAGE

Location	Design Parameters
Downtown	Square concrete pole with Kim CCS fixture (LED preferred)
Old Main	Square concrete pole with Sterner shoebox fixture (HPS) for street scale Round concrete pole with Cyclone post-top fixture for ped-scale lighting
Major Arterials Outside Downtown	Square concrete pole with Sterner shoebox fixture (HPS)
Collector and Tertiary Arterials Outside Downtown	Round/Multi-sided Pole with Ameron Elliptical style arm and cobrahead-type fixture (LED preferred)
BelRed Subarea Arterials	See Appendix B: The BelRed Corridor Plan
BelRed Local Streets	See Appendix B: The BelRed Corridor Plan

B. Lighting Levels

Arterial Streets:

Bellevue's Transportation Department organizes streets into three classifications for arterial street light levels - Major, Collector, and Tertiary. These classifications are shown on Figure 1 with associated design parameters in Table 2.

For Tertiary, Table 2 shows two values for uniformity. Lower uniformity should be provided for completely new city owned systems, whereas retrofit projects (where existing light poles are being utilized) or projects using existing PSE poles may be designed to the higher uniformity value.

PSE Modification:

PSE Modification to design may apply on tertiary or collector arterials that:

1) Serve a residential area with a significant amount of single family residential driveways, and
2) Have above-ground electrical distribution on PSE poles that will remain above-ground after the project is complete.

Verify PSE Modification with the Traffic Engineer prior to proceeding with the design.

For PSE Modification designs, the lighting design is typically limited to the PSE pole locations. Designs should meet the average light levels shown in Table 2 only to the extent practical, as the pole spacing and mounting heights may preclude the ability to reasonably meet minimum average light levels. Uniformity is not considered in PSE Modification designs. In-fill poles (new poles with lights only) are only required when necessary to meet the average light level at a marked midblock pedestrian crossing or an uncontrolled marked crosswalk at an intersection. Example PSE Modification Streets are:

- West Lake Sammamish Parkway
- 108th Avenue SE – Bellevue Way SE to SE 34th Street
- Northup Way NE – 160th Ave NE to West Lake Sammamish Pkwy

Local Streets:

Streets not classified as Major, Collector, or Tertiary (see Figure 1) are considered local streets. No specific design guideline is established for local streets. For new plats or other newly developed local streets city-owned systems are preferred and luminaires should be located as follows:

- at intersections
- at horizontal curves
- at street ends
- at marked pedestrian crossings
- at traffic calming devices
- and at no greater than 300 foot intervals

Luminaires for local streets should be LED and mounting heights should generally be 25 feet in single family residential areas.

For new projects where local streets do not have significant single family residential land

use adjacent to the roadway, and serve multi-family, commercial, light industrial, school, or other institutional areas, streets may be designed to the Tertiary light level. Verify with the Traffic Engineer prior to proceeding with the design.

Sidewalks and Paths:

For sidewalks adjacent to the roadway, whether curb side or separated by a small planter strip, no separate calculations are conducted for light levels on the sidewalk area. This is the standard practice, in recognition that the sidewalk will be significantly illuminated by the lighting system installed for the roadway. For Multipurpose Paths (MPPs) installed in lieu of or in addition to sidewalks and bike lanes, lighting is typically required with a minimum maintained average light level of 5 lux and a uniformity ratio of 10:1. Verify requirements for MPPs with the Traffic Engineer prior to starting design.

Calculation Values:

Values shown in Table 2 are for both HPS and LED systems. A maintenance factor of 0.72 is to be used for all HPS systems and 0.78 for all LED systems.

TABLE 2: ILLUMINANCE METHOD PHOTOMETRIC DESIGN VALUES

ROADWAY SEGMENTS

CLASSIFICATION	LIGHT LEVEL MINIMUM MAINTAINED AVERAGE VALUES* (LUX)		UNIFORMITY RATIO EAVG/EMIN
	ASPHALT CONCRETE	PORTLAND CEMENT CONCRETE	
MAJOR	13	9	3
COLLECTOR	9	6	4
TERTIARY	5	4	4 (New Systems) 6 (Retrofits)

INTERSECTIONS

TYPE	LIGHT LEVEL MINIMUM MAINTAINED AVERAGE VALUES* (LUX)		UNIFORMITY RATIO EAVG/EMIN
	ASPHALT CONCRETE	PORTLAND CEMENT CONCRETE	
MAJOR – MAJOR	26	18	3
MAJOR – COLLECTOR	22	15	3
MAJOR – TERTIARY	18	13	3
COLLECTOR – COLLECTOR	18	12	4
COLLECTOR – TERTIARY	14	10	4
TERTIARY - TERTIARY	10	8	4 (New Systems) 6 (Retrofits)

MARKED MIDBLOCK PEDESTRIAN CROSSING**

CLASSIFICATION	LIGHT LEVEL MINIMUM MAINTAINED AVERAGE VALUES* (LUX)		UNIFORMITY RATIO EAVG/EMIN
	ASPHALT CONCRETE	PORTLAND CEMENT CONCRETE	
MAJOR	26	18	N/A
COLLECTOR	18	12	N/A
TERTIARY	10	8	N/A

* Systems should be designed no higher than 20% above minimum average values

**Includes uncontrolled marked crosswalks at intersections

IV. PROCEDURES

The following is a summary of the procedures for obtaining approval of street lighting designs within the City.

A. Development Projects

1. Refer to Transportation Development Review staff to see if street lighting analysis is required. If analysis shows that street lighting is required, continue as below.
2. For city-owned systems, obtain the services of a qualified licensed engineer. Use this Design Guide to prepare preliminary Plans and Specifications. Confirm design parameters with the Traffic Engineer as necessary. For PSE systems, contact Intolight.
3. Submit (through the Permit Center) the Plans and Specifications for review. The Plans and Specifications will be reviewed and returned to the applicant.
4. Incorporate any review comments and submit (through the Permit Center) three sets of signed specifications, two sets of plans, and one set of mylar plans.
5. After the Plans and Specifications have been approved and permits have been issued, install the system. All work must be done by a qualified electrical contractor. Call for City inspections prior to starting work, as noted on the Right-of-way use permit.
6. Call for final Transportation inspection and acceptance.
7. When the improvements have been completed, inspected, and accepted, update the plans with all as-built information and provide them to the Transportation Development Review Staff.

B. Capital Investment Program (CIP) Projects:

Street lighting is typically included on CIP projects affecting Major, Collector, and Tertiary Arterials. Street lighting improvements may range in scope from completely new city owned systems to systems owned and maintained by PSE that utilize existing PSE poles. City owned systems are preferred due to cost savings in on-going maintenance and energy.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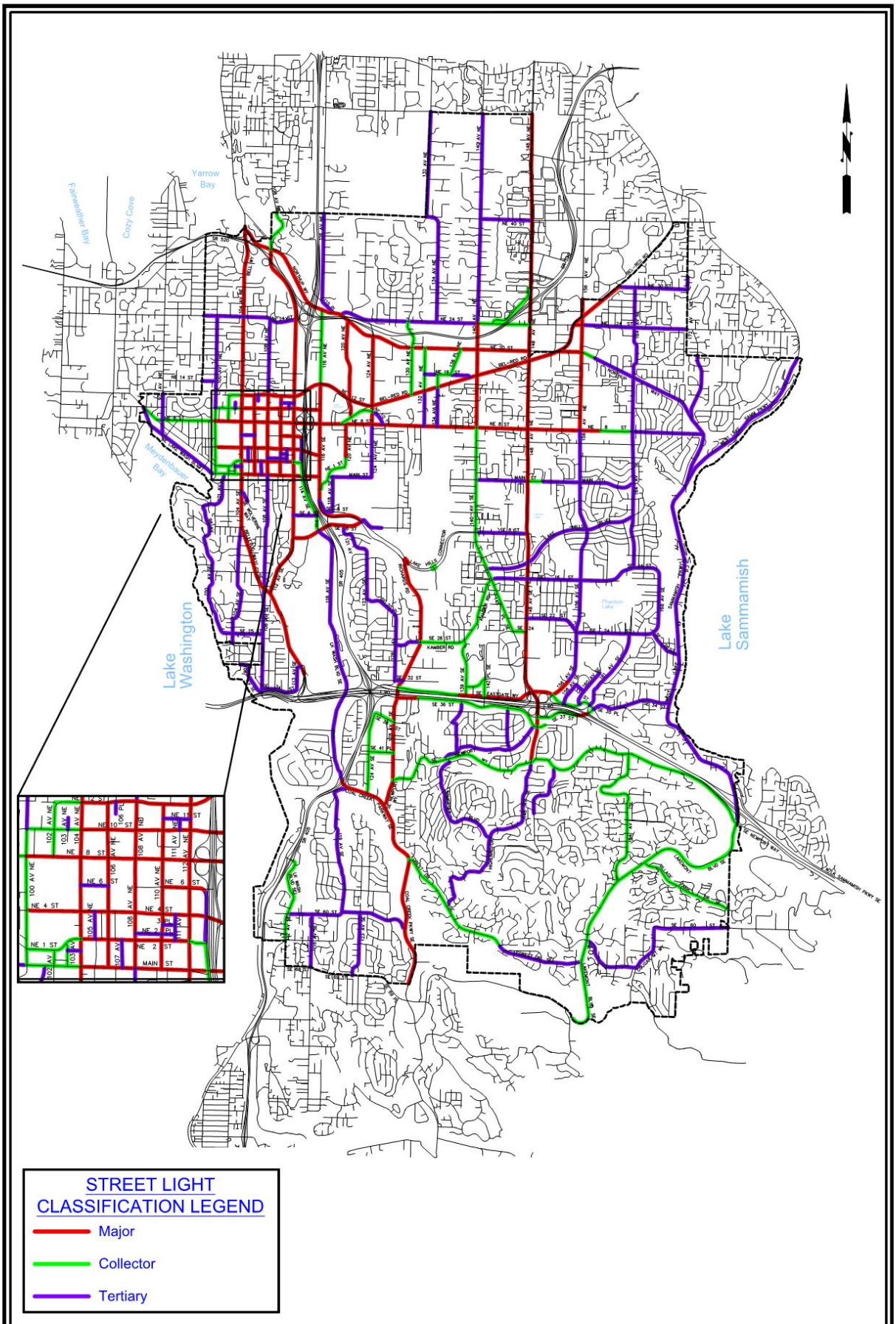

City of Bellevue

FIGURE 1

STREET LIGHT LEVEL MAP

REVISION DATE	12/12
DEPARTMENT	TRANS


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APPENDIX B

The BelRed Corridor Plan

Revised February 12, 2014

For Appendix B content see web link on the Transportation Design Manual Webpage:

http://www.bellevuewa.gov/transportation-design-manual.htm


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